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ABSTRACT

The use and abuse of dangerous and illicit drugs, particularly among young people, continues to rise despite recent efforts to develop and implement drug education programs in schools. This study investigated substance use by rural Kansas fifth and sixth graders. Independent variables were gender, family structure, perceived relationship with parents, family substance use, attitude towards family, peer substance use, and self-concept. Dependent variables were number of cigarettes smoked, frequency of cigarette use, amount of alcohol use, frequency of alcohol use, frequency of smokeless tobacco use, and frequency of marijuana use. The sample consisted of 160 students, comprised of 71 fifth graders, 89 sixth graders, with 78 males and 82 females. A status survey design was employed using a three-way analysis of variance. Results showed peer substance use was a significant main effect for all dependent variables, and was more influential when attitude towards family was average to poor. Higher family substance use resulted in significantly higher mean use by subjects in 11 out of 15 interactions. Subjects with poor self-concept who were users nearly always reported greater mean use than those with positive self-concepts. Although peer influence is a significant factor, this study supports the importance of low substance use by family, and of maintaining a working relationship with the child in reducing substance use among rural elementary students. (Author/LLL)

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DRUG USE IN RURAL KANSAS FIFTH- AND SIXTH-GRADERS

being

A Thesis Presented to the Graduate Faculty
of the Fort Hays State University in
Partial Fulfillment of the Requirements for
the Degree of Master of Science

by

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ABSTRACT

The researcher investigated substance use in rural Kansas fifth and sixth graders. Independent variables were gender, family structure, perceived relationship with parents, family substance use, attitude towards family, peer substance use, and self-concept. Dependent variables were number of cigarettes smoked, frequency of cigarette use, amount of alcohol use, frequency of alcohol use, frequency of smokeless tobacco use, and frequency of marijuana use. (No subjects reported use of marijuana.) The sample consisted of 160 students, comprised of 71 fifth graders, 89 sixth graders, with 78 boys and 82 girls. A status survey design was employed using a three-way analysis of variance. Results showed peer substance use was a significant main effect for all dependent variables, and was more influential when attitude towards family was average to poor. Higher family substance use resulted in significantly higher mean use by subjects in 11 out of 15 interactions. Subjects with poor self-concept who were users nearly always reported greater mean use than those with positive self-concepts. Although peer influence is a significant factor, this study supports the importance of low substance use by family and of maintaining a working relationship with the child in reducing substance use among rural elementary students.

INTRODUCTION

Since the early 1960s, drug use in society has become a matter of increasing concern. The use and abuse of dangerous and illicit drugs, particularly among young people, continues to rise, despite recent efforts to develop and implement drug education programs in schools. By the mid-1970s smoking and drinking, considered an "adult" behavior, represented for the adolescent a passage from childhood to adult status (Jessor & Jessor, 1977; Bratter, 1984, cited in Collabolletta, Fossbender, & Bratter, 1983).

Research has been conducted to determine just what factors or combination of factors influenced young persons to begin experimenting with harmful substances. Although some studies resulted in strong correlations between variables, other research resulted in weaker relationships of the same variables after controlling related factors. Ried, Martinson, & Weaver (1987) found in their study of fifth- through eighth-grade students that self-esteem and relationship with parents and peers were not significant predictors of drug use, whereas earlier studies had indicated the opposite to be true.

Differences in variable relationships have also depended on the particular drug under consideration. Delinquent behavior has been identified by some researchers as the primary predictor for hard liquor use. When considering the entry into illicit drug use, parent-child relationships have emerged a leading factor.

Some factors related to student substance use were

found to be more relevant during certain developmental stages (Kandel, Kessler, & Margulies, 1978; Pisano & Rooney, 1988). Pisano and Rooney's (1988) survey of 1,829 fourth, fifth, and sixth graders suggested that between fifth and sixth grade, students' attitudes became more positive toward drug use. They also reported a significant shift in attitudes ($p < .001$) away from parents and toward peer relationships between the fifth and sixth grades. This peer influence, found to exist as early as 11 years of age, has been shown to be a common variable among young, beginning users (Pisano & Rooney, 1988; Ried et al., 1987; Winfree, 1985).

One of the most frequently reported variables influencing young substance users is peer usage (Bonaguro, Pugh, & Bonaguro, 1986; Capuzzi & Lecoq, 1983; Kandel et al., 1978; Pisano & Rooney, 1988; Ried et al., 1987; Sarvela, Takeshita, & McClendon, 1986). Sarvela et al. (1986), in a study of 181 rural Northern Michigan sixth, seventh, and eighth graders, found a high correlation between the frequency of peer use of marijuana and the frequency of personal use ($p < .001$). Bonaguro et al. (1986), surveyed 1,055 students from grades 4 through 12 concerning use of smokeless tobacco. They reported that smokeless tobacco use among males was highly associated with peer usage. The students responded that peer use influenced their use of chewing tobacco ($r = .57$, $p < .001$) or snuff ($r = .59$, $p < .001$). In a study concerning alcohol, cigarettes, and marijuana, Ried et al. (1987) concluded that "student's perceptions of their peer's drug use has over twice as much influence on drug use as the student's own

attitudes. . . . it seems that adolescents do as their peer role models do" (p. 159).

Research results have indicated that peer influence may increase as parent-child communications break down. Winfree (1985), in his survey of 94 middle school children, measured their changes in drug-use behaviors over a 3-year period. Changes were found to favor drug use ($z = -5.66$, $p < .001$ for alcohol, and $z = -2.518$, $p = .012$ for marijuana). In addition, conflicts with parents over drugs increased significantly ($p = .018$), while peer conflicts over drugs did not change significantly. At the end of 3 years, child-parent conflict was the second best indicator of alcohol use, exceeded only by past use.

Although peer influence is a major factor in adolescent substance use, the research results described here generated positive correlation coefficients between parent-child relationships and substance use. Sheppard, Goodstadt, and Willett (1987) found that 85% of the elementary students in their survey ($n = 1,237$) were less likely to use marijuana if they felt their parents would disapprove, but only 53% were less likely to use it if they felt their friends would disapprove. Similarly, 88% of the secondary students ($n = 1,022$) were less likely to use marijuana if they felt their parents would disapprove, but only 50% were less likely if they felt their friends would disapprove. These data suggested a stronger parental influence. The researchers described a genre of high-risk students who could benefit from individual counseling and "reuniting with their family and its values" (p. 127). They recommended that parents be well-

informed of their importance, not their child's peer group, in influencing the use of drugs with their children.

Further support of the parents' influence was found in research which identified certain characteristics of the home and family that seem to reduce the risk of children's substance use. Children from intact families were found to be significantly better adjusted than those from divorced or single-parent families ($p < .0001$) (Nunn & Parish, 1982). Selnow (1987) reported from his studies on parent-child relationships (N = 2419, N = 2272), that children living in single-parent homes had greater substance use than those children living in intact homes. He found evidence that children who reported stronger relationships with parents also had lower substance usage. Moreover, the researcher suggested that a stronger parent-child relationship may have more influence on reducing substance use than whether it is a one- or two-parent home.

Theorists have long recognized the importance of positive parental influence in reducing deviant behavior. Problem or deviant behavior is the departure from what is acceptable in a larger social structure. Hirschi (1969) postulated that the likelihood of delinquency declined as stronger, more positive relationships with parents increased. Jessor and Jessor (1974), in the examination of the mother's influence on child behavior, reported evidence that the mothers with less conventional ideologies had adolescents displaying problem behaviors, whereas more traditional mothers were more likely to have conforming children. Correlation coefficients between mothers' ideologies and female adolescent problem behavior showed a

negative relationship ($p < .05$) for all three maternal ideology measures. Correlation coefficients between mothers' ideologies and male adolescent problem behavior also showed a negative relationship, with two of the three measures being statistically significant ($p < .10$). These relationships remained strong even when considering peer influence.

Recent researchers found deviant behavior to be a precursor to drug use. Kandel et al. (1978) found that many factors, which in the past had been associated with various drug behaviors, actually preceded drug use. One of these factors was involvement in deviant activities, and was a major predictor for future use of hard liquor. Prior involvement in problem behaviors, according to Ried et al. (1987), was the third most significant predictor of drug use ($p < .01$), exceded only by peer use and the youngster's own favorable attitude toward drugs. Sheppard et al. (1987) reported that drug use, not being an isolated behavior, appeared to follow other deviant behaviors. These deviant activities, they contended, were strongly related to family dynamics.

With increasingly supportive evidence of the influence of the parent-child relationship in terms of deviant behavior and future drug use, healthy communication and family dynamics are becoming a focus of experimental drug education programs. Hawkins, Von Cleave, and Catalano (1989) implemented a program based on Hawkins' social development model in an experiment involving 458 early elementary students. Following the evidence that early antisocial behavior preceded delinquency and drug use in adolescence, they utilized a

program that included parent training to strengthen family bonding and parenting skills, along with teacher training to improve classroom behavior and peer interaction. Such training, it was hypothesized, would reduce destructive behavioral patterns in children as they progressed through school, lowering the risk of students to engage in drug use. After 2 years of intervention at grades 1 and 2, experimental boys were rated as significantly less aggressive ($p < .05$), and experimental girls were rated as significantly less self-destructive ($p < .01$) than those in the control group. Although the effects were limited, the results supported programs involving teacher and parent training in early childhood education. Further longitudinal data will provide insight regarding the effectiveness of this approach in reducing aggression, delinquent behavior and eventual drug use among adolescents.

Substance use in the home is another important variable linked to adolescent substance use. Young, Hall-Lundstrum, and Core (1987) found that among 289 second graders, those who were suspected of being children of alcoholics were more likely (1) to view themselves as future users of smokeless tobacco ($p = .021$), (2) to have drunk alcohol ($p = .017$), (3) to be currently using alcohol ($p = .001$), and (4) to indicate future heavy drinking ($p = .001$). In another similar study among elementary school children, Young and Foulk (1985) reported that seeing alcohol and tobacco used at home had a statistically significant association with expected use of those products [for tobacco, χ^2 (2, $N = 733$) = 18.51, $p < .001$; for alcohol,

χ^2 (2, N = 720) = 80.63, p < .001]. Bonagura et al. (1986) concluded from a study of Ohio 4th through 12th graders that father's approval contributed significantly (p < .001) to the likelihood of adolescent use of smokeless tobacco. Kandel et al. (1978) pointed out that although beliefs and values are important, modeling drug-use behaviors of parents and peers are more influential. Collabolletta et al. (1983) reinforced the importance of adult modeling behavior when they stated, "Teachers' ideas, beliefs, attitudes, prejudices, and practices concerning drugs and alcohol not only will be observed and challenged by students, but also will be emulated by them" (p. 450). These findings make it difficult to discount the important role of parents and significant others in controlling drug use among children through appropriate modeling.

The relationship of self-esteem to drug use has also been investigated. Although there appears to be a strong association between self-esteem and adolescent use and misuse of substances, the nature of this association remains under question. Butler (1982) inferred that inadequate feelings about ones self related to frequent drinking among 12- and 13-year-olds, whereas more positive feelings tended to be associated with abstinence. Dielman, Leech, Lorenger, and Horvath (1984) found that a relationship existed, although small, between higher self-esteem scores and lower present and predicted substance use among fifth- and sixth-grade children.

Other research yielded results contradictory to the above. These measured self-esteem in terms of the individuals' subcultures, or used various self-esteem sub-scales. Mitic (1980), in a study of 12-

to 18-year-olds (N = 411), found higher overall self-esteem scores among regular alcohol users than among non-users. In considering the differences in the sub-scales of self-esteem, he suggested that as academic self-esteem decreased, these students turned to peer acceptance to compensate. To become accepted the student adapted social behaviors of that peer group, including drinking habits. In establishing this new status among friends, the student's peer self-esteem increased. Mitic concluded that although the causal nature was difficult to assign, there remained a strong relationship between self-esteem and drinking behavior ($p < .05$). He also pointed to alcohol use as a coping mechanism for stress and academic failure.

Young et al. (1987) interviewed Arkansas second-grade students as part of a drug education program evaluation. They reported suspected children of alcoholics (COAs) had significantly lower self-esteem than other children. Self-esteem measured in terms of parent, perceived physical attractiveness, self-worth, and perceived sports ability showed varied results, significant according to sex, but not consistent throughout the various categories. For example, for perceived physical attractiveness, girls who had smoked "a few times" showed highest self-esteem; boys in the same category showed the lowest. But in terms of self-worth, boys who had smoked "a few times" showed much higher self-esteem than the same category of girls. In accordance with Mitic's study were the peer self-esteem results which showed that children with the highest rate of use of cigarettes, smokeless tobacco, and alcohol, also had the highest measure of self-esteem.

Still other researchers failed to find evidence that self-esteem, although related, emerged as a major variable. A study of fifth through eighth graders by Ried et al. (1987) supported the opinion that drug using students reported a lower self-esteem than non-users. But when other variables were controlled, it did not hold up as a significant predictor of drug use. Accordingly, Hays, Stacy, Widaman, DiMatteo, and Downey (1984) found the correlation coefficient between self-esteem and drug use weakened when the variables conformity-commitment and religiousness were taken into account, again suggesting that it was not a predictor of drug use.

Miller's (1988) study of fifth graders (N = 84) involved an 8-hour, 8-week program which focused on self-esteem and attitudes about alcohol/substance abuse. The results revealed that students' attitudes at this age could be positively swayed concerning the dangerous use of drugs. Pretest and posttest comparisons showed student responses changed to positive attitude responses with probability ranging from $p < .05$ to $p < .001$. She concluded that a self-esteem building program implemented at a pre-teen level would allow students to interact more independently and maturely with their peers, thus being less supportive of pro-drug attitudes.

Mauss, Hopkins, Weisheit, and Kearney (1988) evaluated the results of a similar alcohol education program which was oriented towards increasing knowledge of the effects of alcohol and improving self-esteem and decision-making skills of junior- and senior-high students. Their findings, based on 3 years of data from 431 students, indicated very little effect on drinking behavior after participation in

the drug program. In fact, the curricular variables (knowledge about alcohol, attitudes toward alcohol, decision-making skills, and self-esteem) showed no significant relationship with drinking behavior after adjusting for social and psychological variables already in place before intervention. They concluded that drug programs such as this will not meet with expected success because of the other pre-established factors, such as societal norms, peer control, parent control, and intimacy with significant others.

Pre-established factors become a consideration in reviewing the effects of any drug education activities. Children, even before beginning kindergarten, are exposed to variables completely outside the realm of the classroom (Young & Williamson, 1983). An example would be the contemporary societal norms reinforced through the media. Mauss et al. (1988) pointed out that some education programs, although not proving effective with other drugs, have shown promise in affecting cigarette use. They raised the question as to whether it was the program itself that was successful, or the change in adult societal norms resulting from the nationwide anti-smoking campaigns. In contrast, consider the continuous exposure through advertising to alcohol consumption as the way to fun and acceptance. From beach parties to special occasions, athletes and other "in" people are shown using alcohol. When one considers the strong evidence of alcohol as the gateway to other drugs (Hutchinson & Little, 1985; Kandel et al., 1978; LaChance, 1988) along with the persistent "alcohol is fun" message in our society, one must look to the media and adult norm

expectations as other important factors affecting adolescent substance use.

Increased stress is yet another variable facing children. Besides the normal developmental changes that take place, other influences have been listed as stressors among school children (Omizo, Omizo, & Suzuki, 1988). Problems including divorce, working parents, peer pressure, and uncertainties of life and the future all manifest themselves in psychological, physiological, behavioral, and emotional symptoms, including self-destructive behaviors. Without appropriate coping skills they may find relief through mind-altering drugs (Hutchinson & Little, 1985; LaChance, 1988; Mitic, 1980). Blau, Gillespie, Felner, and Evans (1988) supported this idea by suggesting that low self-esteem and high levels of depression and anxiety may set the stage for drug use in adolescents.

Certain other factors appear to make some students more at-risk for use or abuse than their classmates. Marijuana and smokeless tobacco have shown heavier use by males than by females (Bonaguro et al., 1986; Sarvela et al., 1986). In fact Kandel (1980) reported male adolescents were more likely to use and abuse all categories of drugs than were females. Butler (1982) found social class to be a factor, with higher percentages of adolescent drinkers in the middle and upper classes. Eckert (1983) reported that the substances used by adolescents to increase their "adult" status were modified by the socio-economic background in which they lived. This would help explain the success of some programs in reducing the use of one drug

but not others. Another variable, religiosity of youth, has affected the use and the intensity of use of alcohol (Capuzzi & Lecoq, 1983).

The literature reviewed was not inclusive of all the variables which have been shown to have an association with adolescent drug use. However, it described a set of variables whose associations and interactions may have implications for the development of drug education programs that encompass school, home, and community. These variables formed the basis for the present research.

Statement of the Problem

The purpose of the researcher was to investigate substance use of rural Kansas fifth and sixth graders.

Importance of the Research

The dramatic recent rise in drug use among youth has caused many to look to drug education in public schools as a means to combat use and abuse of drugs among children. However, frequently the students most at risk of using or abusing drugs are those who may have poor attendance or poor achievement in school. The importance of reaching these at-risk students calls upon schools and communities to develop drug education programs that include parent training and community awareness as well as the obvious classroom intervention.

Research has indicated that better parent-child relationships may positively affect early use of "gateway" drugs and reduce the frequency of use among adolescents. Through further investigation, perhaps insights can be gained as to the nature of child-parent-peer

associations. Th information can lay the foundations for drug education progra s that focus on identifying and strengthening those factors associated with reduced use and non-use of substances. Programs may be established to include parents, drawing upon and developing their influence with their children.

A better understanding of the relationship of these variables to experimentation with entry level drugs will help target young persons who may be at risk in local schools. Counselors and curriculum directors can then choose programs which will best fit their school and community. Such programs, if successful, could help reduce the etiological factors underlying use and abuse and begin to impact the behavior of targeted youth.

The results of the present study will provide information pertaining to the following questions:

1. Is there an association between gender and substance use?
2. Is there an association between family structure and substance use?
3. Is there an association between perceived relationship with parents and substance use?
4. Is there an association between family substance use and substance use of fifth and sixth graders?
5. Is there an association between attitude towards the family and substance use?
6. Is there an association between peer substance use and substance use of fifth and sixth graders?

7. Is there an association between self-concept and substance use?

Composite Null Hypotheses

Because of the interrelatedness of the variables associated with drug use and abuse among youngsters, their individual strength may differ according to the combinations tested. The hypotheses stated here were an attempt to further establish the importance of certain factors to given conditions in the student's social and familial structures.

Each null hypothesis was tested at the .05 level of significance.

1. The differences among the mean substance use according to peer substance use, family substance use, and attitude towards family will not be statistically significant.

2. The differences among the mean substance use according to peer substance use, family substance use, and self-concept will not be statistically significant.

3. The differences among the mean substance use according to peer substance use, attitude towards family, and self-concept will not be statistically significant.

4. The differences among the mean substance use according to family substance use, attitude towards family, and self-concept will not be statistically significant.

5. The differences among the mean substance use according to gender, family structure, and perceived relationship with parents will not be statistically significant.

Definition of Variables

Independent Variables

Independent variables 1 through 3 were taken from the Personal Information section of the Elementary Student Survey.

1. Gender -- two levels:

   Level 1 -- boys, and

   Level 2 -- girls.

2. Family structure -- 3 levels:

   Level 1 -- live with both parents,

   Level 2 -- live mostly with one parent, and

   Level 3 -- live with someone other than parents.

3. Perceived relationship with parents. The levels were determined post hoc.

   Level 1 -- very good,

   Level 2 -- good, and

   Level 3 -- OK to poor.

4. Family substance use was derived from four questions worded similarly to the student substance use questions from the DCCCA[1] Survey. Total possible score was 16. The levels were determined post hoc.

   Level 1 -- low, never used or used one drug only on special occassions,

---

[1] The letters DCCCA are no longer used as an acronym by the research organization they represent.

Level 2 -- medium, ranged from use of only two drugs once or more a year, to daily use of only one drug, and

Level 3 -- high, ranged from multiple drug use with one used at least once or more a month, to multiple drug use with at least one used daily.

5. Attitude toward family was measured by the number of positive words marked on the Personal Attribute Inventory for Your Family. Highest possible total is 15. The levels were determined post hoc.

Level 1 -- very positive, score of 13 or above, and

Level 2 -- average to poor, score of 12 or below.

6. Peer substance use was determined by four questions concerning the number of friends who sometimes use cigarettes, alcohol, marijuana, or smokeless tobacco. Total possible score was 16. The levels were determined post hoc.

Level 1 -- no use, and

Level 2 -- use.

7. Self-esteem was measured by the Personal Attribute Inventory for Children for Self. The levels were determined post hoc.

Level 1 -- very positive, score of 13 or above, and

Leve 2 -- average to poor, score of 12 or below.

Dependent Variables

The 6 dependent variables of student substance use were determined by the scores of 8 questions from the modified DCCCA Elementary School Student Survey concerning student's use of drugs.

1. Number of cigarettes smoked, 4 points possible.
2. Frequency of cigarette use, 4 points possible.
3. Amount of alcohol use, 4 points possible.
4. Frequency of alcohol use, 4 points possible.
5. Frequency of chewing tobacco use, 8 points possible.
6. Frequency of marijuana use, 8 points possible. (The inventory included marijuana use, but no subjects reported such use.)

Limitations

The following may have affected the outcome of the study:

1. the students surveyed were not randomly selected,
2. the students surveyed resided in an area largely characterized by a German Catholic background, and
3. self-reporting instruments were used.

Delimitations

1. No reliability or validity studies were made of the questions on the Elementary Student Survey.

Definition of Terms

For the purpose of this study, "peers" refers to close friends of the student rather than all other youth of his/her age group.

Methodology

Setting

The communities in which the subjects resided and attended school were located in rural Kansas. The primary industry for the area was agriculture. A strong German Catholic influence was prevalent in all five communities. The three school administrators indicated that their district employed a drug education program with varying degrees of emphasis across the grade levels.

Subjects

The researcher relied upon a convenient sample of all fifth- and sixth-grade students from 5 elementary schools. Only those students present the day of testing were surveyed. The sample consisted of a total of 160 students. Seventy-one were fifth graders, 89 were sixth graders, with the total sample being comprised of 78 boys and 82 girls.

Instruments

Three self-reporting instruments were used to generate information and scores for evaluation. The Elementary Student Survey obtained demographic and substance use information (see Appendix A). The Personal Information section included questions about family structure, strength of the relationship with parent(s), family substance use, and sources of knowledge about drugs. These were based on questions and information gathered from related literature. The next

three sections measured substance use. Three questions from the modified DCCCA Elementary School Student Survey[2] and one of the researcher's questions yielded an index for the independent variable peer substance use. These questions concerned the number of peers that use alcohol, cigarettes, smokeless tobacco, and marijuana. The five response options varied from "none" to "all". Eight questions modified from the DCCCA Elementary School Student Survey yielded scores for each of the six dependent variables concerning the student's frequency of and amount of substance use. Five levels of options were used, except alcohol frequency which employed six levels. Four similarly worded questions of the researcher's yielded a score for substance use in the home. Five levels of options were used.

No reliability values were established for this instrument. Face validity was established by submitting the instrument to experts in the field of counseling and substance abuse services.

Student's attitude toward the family was measured using the Personal Attribute Inventory for Children for Family (PAIC-Family).[3] It consists of an alphabetical list of 24 positive and 24 negative words which can be used to describe the family (see Appendix B). The student marked 15 words. Only positive words were counted in scoring. The researcher was unable to obtain validity and reliability

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[2] The DCCCA Elementary School Student Survey was developed by Jim Scheurich at the DCCCA Center, Inc., in Lawrence, Kansas.

[3]The PAIC was developed by Dr. Thomas Parish of Kansas State University, Manhattan, Kansas.

coefficients for the PAIC-Family. However, the PAIC has been used successfully numerous times by its author to measure family happiness.

The student's self-concept was measured using the Personal Attribute Inventory for Children for Self. The instrument used the same alphabetical list of words as the PAIC-Family. The student marked 15 words which best described self. Only positive words were counted in scoring. The PAIC, when used to measure self-concept of sixth graders, has had a concurrent validity correlation of .69 with the Piers-Harris Children's Self-Concept Scale. The test-retest reliability coefficient is .83 (Parish & Taylor, 1978).

Design

A status survey design with predetermined and post hoc grouping was employed. A three-way analysis of variance was used. The independent variables were gender, family structure, perceived relationship with parents, family substance use, attitude towards family, peer substance use, and self-concept. The dependent variables were number of cigarettes smoked, frequency of cigarette use, amount of alcohol use, frequency of alcohol use, frequency of chewing tobacco use, and frequency of marijuana use. All hypotheses were tested at the .05 level of significance.

The following design was employed with each composite null hypothesis:

1. composite null hypothesis number one: a 2 x 3 x 2 factorial design,

2. composite null hypothesis number two: a 2 x 3 x 2 factorial design,

3. composite null hypothesis number three: a 2 x 2 x 2 factorial design,

4. composite null hypothesis number four: a 3 x 2 x 2 factorial design, and

5. composite null hypothesis number five: a 2 x 2 x 3 factorial design.

McMillan and Schumacher (1989) identified 10 threats to internal validity. Threats to internal validity were dealt with in the following ways:

1. History -- did not pertain to this study because it was status survey.

2. Selection -- Subjects were a convenience sample. All students who were present and who had permission from their parents were administered the inventory. The study focused on drug use by fifth and sixth graders in a rural area of Kansas and results should not be generalized to other populations.

3. Statistical regression -- did not pertain to the present study because grouping subjects by extreme scores was not employed.

4. Testing -- did not pertain to this study because it was status survey.

5. Instrumentation -- The researcher read all preliminary and testing instructions to all groups surveyed to increase accuracy in administration (see Appendix C).

6. Mortality -- did not pertain to this study because it was

status survey.

7. Maturation -- did not pertain to this study because it was status survey.

8. Diffusion of treatment -- did not pertain to this study because it was status survey.

9. Experimenter bias -- All preliminary information and instructions were read to ensure consistency between groups. Data were collected under standard conditions. No treatment was provided.

10. Statistical conclusion -- Two mathematical assumptions were violated, randomization and equal numbers in cells. The general linear model was used to correct for the unequal numbers in cells. The researcher did not project interpretations beyond the statistical procedures employed.

Threats to internal validity (McMillan & Schumacher, 1989) were dealt with in the following ways:

1. Population external validity -- did not have a random sample. Generalizations should be made only to fifth and sixth graders from a rural German-Catholic population.

2. Ecological external validity -- Standard instructions were employed in data collection (see Appendix C). The present study was status survey.

Data Collecting Procedure

Consent to survey was granted by the administrators of the school districts involved, and a date to conduct the survey was

established. Prior to that date, a letter explaining the reason for the study and the right to refuse participation was sent to the parents of each of the students enrolled in the fifth and sixth grade in each district (see Appendix D). The three instruments were printed on three different colors of paper for ease in administering.

The data were collected by the researcher during the school day. Instruments were handed to the students in a single packet. Before beginning each instrument, directions were read to the students (see Appendix C). After all the instruments were completed, the students returned them to the packet, and the researcher collected them. The classroom teacher remained in the room during the survey. Approximate time in each classroom was 40 minutes.

Research Procedure

The following steps were implemented:

1. a review of related literature was conducted using materials obtained through the Educational Resources Information Center (ERIC), professional journals and books, and from materials furnished by KS/SRS Alcohol and Drug Abuse Service in Topeka, KS,

2. DCCCA Center, Inc., in Lawrence, KS, was contacted to obtain permission to use the DCCCA Elementary School Student Survey (the survey was public domain so no letter of permission was required),

3. Dr. Thomas Parish was contacted by the researcher for permission to use the PAIC list (the list was public domain),

4. the Elementary Student Survey was developed by the researcher,

5. the instrument was submitted to experts in the field of drug research and services to support its face validity,

6. administrators of the schools were contacted and dates were set for the survey to be conducted,

7. the research proposal was written,

8. the research proposal was defended,

9. data were collected,

10. the instruments were scored,

11. the data were analyzed by the Fort Hays State University Computing Center,

12. the final report was written,

13. the final report was defended,

14. the final report was accepted, and

15. necessary editing was completed.

Data Analysis

The following were compiled:

1. appropriate descriptive statistics,

2. three-way analysis of variance (general linear model),

3. Bonferroni (Dunn) t-test for means, and

4. Duncan's multiple range test for means.

RESULTS

The purpose of the researcher was to investigate substance use of rural Kansas fifth and sixth graders. Data were taken from 160 fifth- and sixth-grade students from five elementary schools. Seventy-one were fifth graders, 89 were sixth graders, with the total sample being comprised of 78 boys and 82 girls. Of the 160 subjects sampled, 24 reported using alcohol, 7 reported using cigarettes, and 5 reported using smokeless tobacco. The independent variables were the student's gender, family structure, perceived relationship with parents, family substance use, attitude toward family, peer substance use, and self-concept. The dependent variables were the student's number of cigarettes smoked, frequency of cigarette use, amount of alcohol use, frequency of alcohol use, and frequency of smokeless tobacco use. (The inventory included the frequency of marijuana use, but no subjects reported such use.) Five null hypotheses were tested. The following design was employed with each composite null hypothesis:

composite null hypothesis number one: a 2 x 3 x 2 factorial design,

composite null hypothesis number two: a 2 x 3 x 2 factorial design,

composite null hypothesis number three: a 2 x 2 x 2 factorial design,

composite null hypothesis number four: a 3 x 2 x 2 factorial design, and

composite null hypothesis number five: a 2 x 2 x 3 factorial design.

The result section was organized according to composite null hypotheses for ease of reference. Information pertaining to each composite null hypothesis was presented in a common format.

It was hypothesized in composite null hypothesis number one that the differences among the mean substance use according to peer substance use, family substance use, and attitude towards family would not be statistically significant. Information pertaining to composite null hypothesis number one was presented in Table 1. The following were cited in Table 1: variables, sample sizes, means, standard deviations, F values, and p levels.

Table 1

A Comparison of Mean Substance Use According to Peer Substance Use, Family Substance Use, and Attitude Toward Family Employing a Three-Way Analysis of Variance

Variable	n	M*	S	F value	p level
Number of Cigarettes Smoked					
Peer Substance Use A					
No use (reported)	113	0.009[a]	0.09	6.67	.0108
Use (reported)	47	0.191[b]	0.54		
Family Substance Use B					
Low**	85	0.024[d]	0.22		
Medium	44	0.068	0.33	3.28	.0405
High	31	0.161[e]	0.45		
Attitude Towards Family C					
Very positive***	139	0.058	0.29	0.01	.9401
Average to Poor	21	0.095	0.44		
Interactions					
A x B				2.22	.1126
A x C				0.16	.6941
B x C				1.50	.2256
A x B x C				2.39	.0949

(Continued)

Table 1 (continued)

Variable	n	M	S	F value	p level
Frequency of Cigarette Use					
Peer Substance Use A					
No use (reported)	113	0.018[a]	0.19	4.89	.0285
Use (reported)	47	0.234[b]	0.67		
Family Substance Use B					
Low	85	0.035[a]	0.33		
Medium	44	0.045[a]	0.21	3.52	.0321
High	31	0.258[b]	0.68		
Attitude Towards Family C					
Very Positive	139	0.079	0.40	0.18	.6696
Average to Poor	21	0.095	0.44		
Interaction					
A x B				1.91	.1512
A x C				0.00	.9529
B x C				0.19	.8297
A x B x C				0.85	.4286

(Continued)

Table 1 (continued)

Variable	n	M	S	F value	p level
Use of Smokeless Tobacco					
Peer Substance Use A					
No use (reported)	113	0.018[a]	0.19	10.67	.0014
Use (reported)	47	0.255[b]	1.21		
Family Substance Use B					
Low	85	0.000[a]	0.00		
Medium	44	0.046[a]	0.30	11.61	.0001
High	31	0.387[b]	1.48		
Attitude Towards Family C					
Very Positive	139	0.043[a]	0.27	5.96	.0158
Average to Poor	21	0.381[b]	1.75		
Interaction					
A x B				9.48	.0001
A x C				7.64	.0064
B x C				7.36	.0009
A x B x C				9.24	.0002

(Continued)

Table 1 (continued)

Variable	n	M	S	F value	p level
Amount of Alcohol Use**					
Peer Substance Use A					
No use (reported)	113	0.080[a]	0.30	7.67	.0063
Use (reported)	47	0.809[b]	1.33		
Family Substance Use B					
Low	85	0.165	0.67		
Medium	44	0.386	0.89	0.98	.3771
High	31	0.516	1.06		
Attitude Towards Family C					
Very Positive	139	0.266	0.80	0.03	.8536
Average to Poor	21	0.476	0.98		
Interaction					
A x B				4.51	.0125
A x C				3.00	.0853
B x C				0.00	.9967
A x B x C				1.54	.2172

(Continued)

Table 1 (continued)

Variable	n	M	S	F value	p level
Frequency of Alcohol Use					
Peer Substance Use A					
No use (reported)	113	0.292[a]	0.80	8.55	.0040
Use (reported)	47	1.192[b]	1.41		
Family Substance Use B					
Low	85	0.176[a]	0.68		
Medium	44	0.841[b]	1.20	6.08	.0029
High	31	1.194[b]	1.42		
Attitude Towards Family C					
Very Positive	139	0.504	1.05	0.18	.6762
Average to Poor	21	0.905	1.34		
Interaction					
A x B				10.61	.0001
A x C				2.34	.1285
B x C				1.38	.2558
A x B x C				2.09	.1270

* The larger the value, the greater the use.

**Low -- never used or used one drug only on special occassions; medium -- ranged from use of only two drugs once or more a year, to daily use of only one drug; high -- ranged from multiple drug use with one used at least once or more a month, to multiple drug use with at least one used daily.

***Very positive -- scored 13 or above on PAIC-Family; average to poor -- scored below 13 on PAIC-Family.

****Of the subjects reporting use, 100% reported use of alcohol, 15% reported use of cigarettes, and 11% reported use of smokeless tobacco.

abc Unlike symbols indicate difference statistically significant at .05 level according to Bonferroni (Dunn) t test for means.

def Unlike symbols indicate difference statistically significant at .05 level according to Duncan's Multiple Range test for means.

Sixteen of the 35 p values were statistically significant at the .05 level; therefore, the null hypotheses for these comparisons were rejected. Ten of the 16 significant comparisons were main effects. The following main effects were statistically significant:

1. peer substance use for the dependent variables number of cigarettes smoked, frequency of cigarette use, use of smokeless tobacco, amount of alcohol use, and frequency of alcohol use,

2. family substance use for the dependent variables number of cigarettes smoked, frequency of cigarette use, use of smokeless tobacco, and frequency of alcohol use, and

3. attitude towards family for the dependent variable smokeless tobacco.

The information cited in Table 1 indicated the following for main effects:

1. subjects whose peers were non-users reported significantly less use for all dependent variables,

2. subjects whose family were low or medium users reported significantly less use for all dependent variables except amount of alcohol use, and

3. subjects whose attitude towards family was very positive reported significantly less use of smokeless tobacco.

The following six interactions were statistically significant:

1. peer substance use and family substance use for the dependent variable use of smokeless tobacco,

2. peer substance use and attitude towards family for the dependent variable use of smokeless tobacco,

3. family substance use and attitude towards family for the dependent variable use of smokeless tobacco,

4. peer substance use, family substance use, and attitude towards family for the dependent variable use of smokeless tobacco,

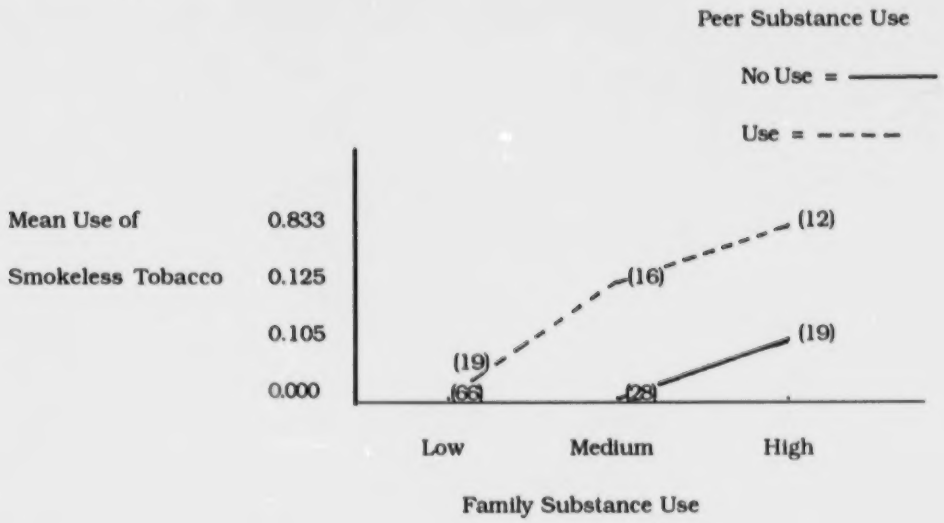
5. peer substance use and family substance use for the dependent variable amount of alcohol use, and

6. peer substance use and family substance use for the dependent variable frequency of alcohol use.

The interaction between peer substance use and family substance use for the dependent variable use of smokeless tobacco was depicted in a profile plot. Figure 1 contains mean use of smokeless tobacco and curves for peer substance use.

Figure 1

The Interaction Between Peer Substance Use and Family Substance Use for the Dependent Variable Use of Smokeless Tobacco



The interaction between peer substance use and family substance use for the dependent variable use of smokeless tobacco was ordinal. The information cited in Figure 1 indicated the following:

1. subjects who had peers who were users and came from a family which had high use reported numerically the highest use of smokeless tobacco,

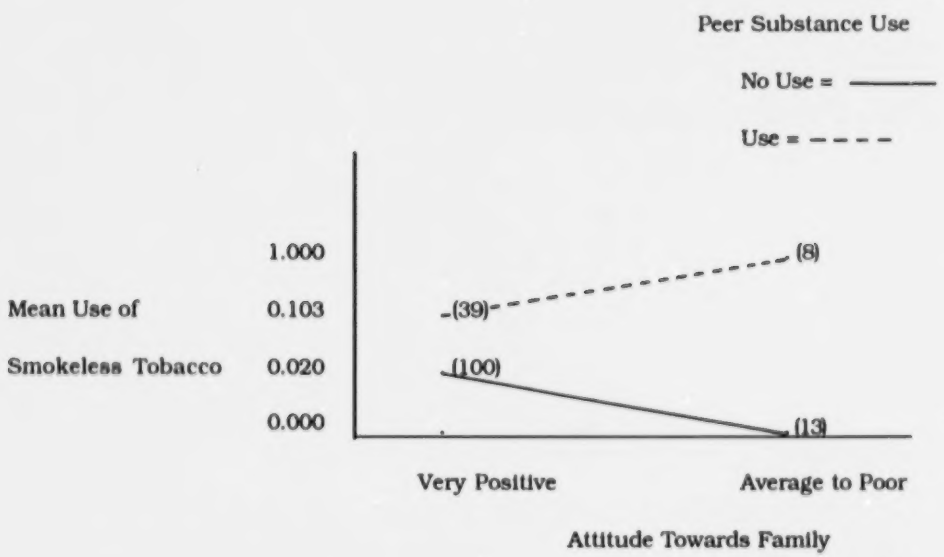
2. subjects who had peers who were users and came from families with medium and high use reported numerically higher use than subjects whose peers were non-users from families with medium and high use, and

3. subjects who had peers who were users and subjects who had peers who were non-users from families with low use reported no use.

The interaction between peer substance use and attitude towards family for the dependent variable use of smokeless tobacco was depicted in a profile plot. Figure 2 contains mean use of smokeless tobacco and curves for peer substance use.

Figure 2

The Interaction Between Peer Substance Use and Attitude Towards Family for the Dependent Variable Use of Smokeless Tobacco



The interaction between peer substance use and attitude towards family for the dependent variable use of smokeless tobacco was ordinal. The information cited in Figure 2 indicated the following:

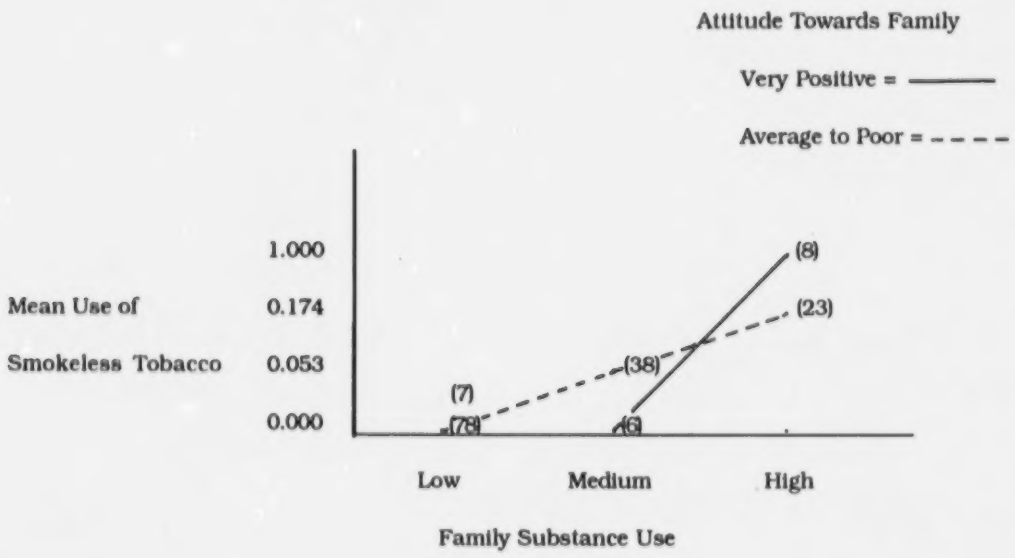
1. subjects whose peers were non-users and who had an average to poor attitude towards family reported numerically the lowest use of any group, and

2. subjects whose peers used smokeless tobacco and who had an average to poor attitude towards family reported numerically the highest use of any group.

The interaction between family substance use and attitude towards family for the dependent variable use of smokeless tobacco was depicted in a profile plot. Figure 3 contains mean use of smokeless tobacco and curves for attitude towards family.

Figure 3

The Interaction Between Family Substance Use and Attitude Towards Family for the Dependent Variable Use of Smokeless Tobacco



The interaction between family substance use and attitude towards family for the dependent variable use of smokeless tobacco was disordinal. The information cited in Figure 3 indicated the following:

1. subjects with a very positive attitude and those with an average to poor attitude towards family, whose family substance use was low reported numerically the lowest use of any group,

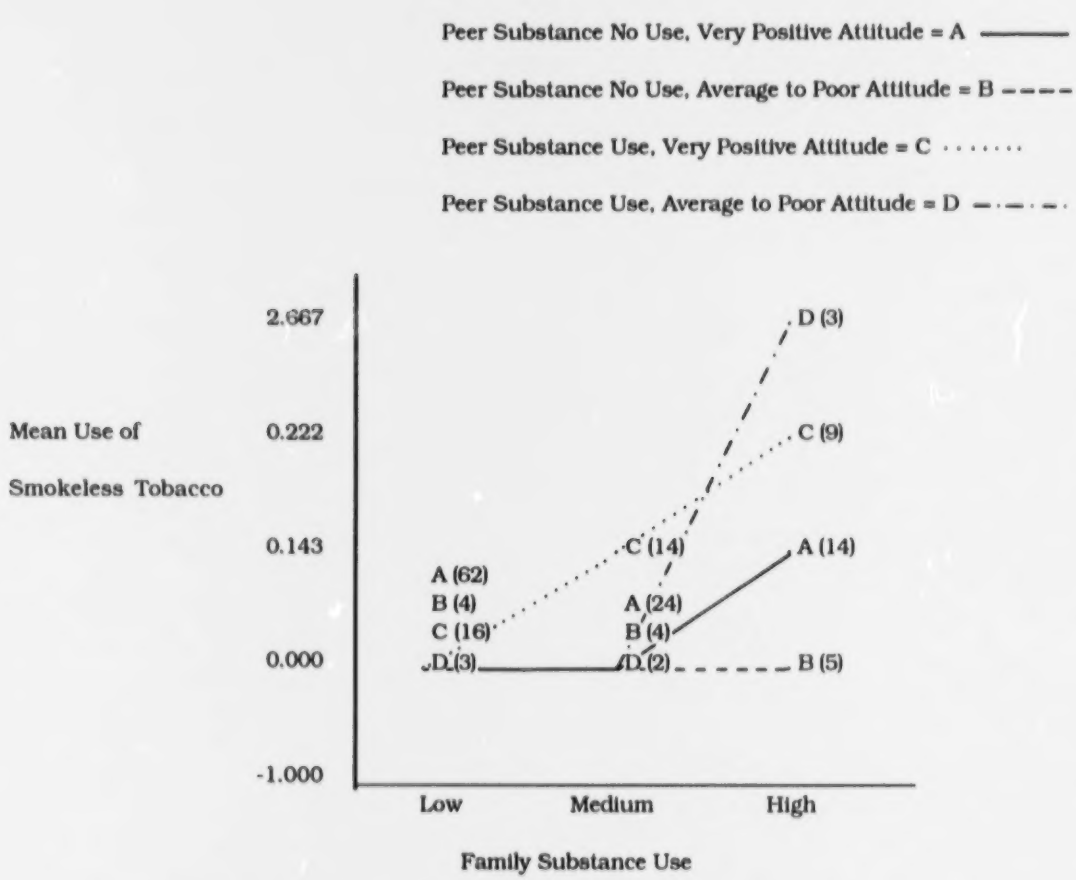
2. subjects with an average to poor attitude towards family whose family use was high reported numerically the highest use of any group, and

3. subjects whose family substance use was high reported numerically greater use than those whose family substance use was low or medium.

The interaction among peer substance use, family substance use, and attitude towards family for the dependent variable use of smokeless tobacco was depicted in a profile plot. Figure 4 contains mean use of smokeless tobacco and curves for peer use and attitude towards family.

Figure 4

The Interaction Among Peer Substance Use, Family Substance Use, and Attitude Towards Family for the Dependent Variable Use of Smokeless Tobacco



The interaction among peer substance use, family substance use, and attitude towards family for the dependent variable use of smokeless tobacco was disordinal. The information cited in Figure 4 indicated the following:

1. for both levels of peer substance use and both levels of attitude towards family, subjects with low family substance use reported no use,

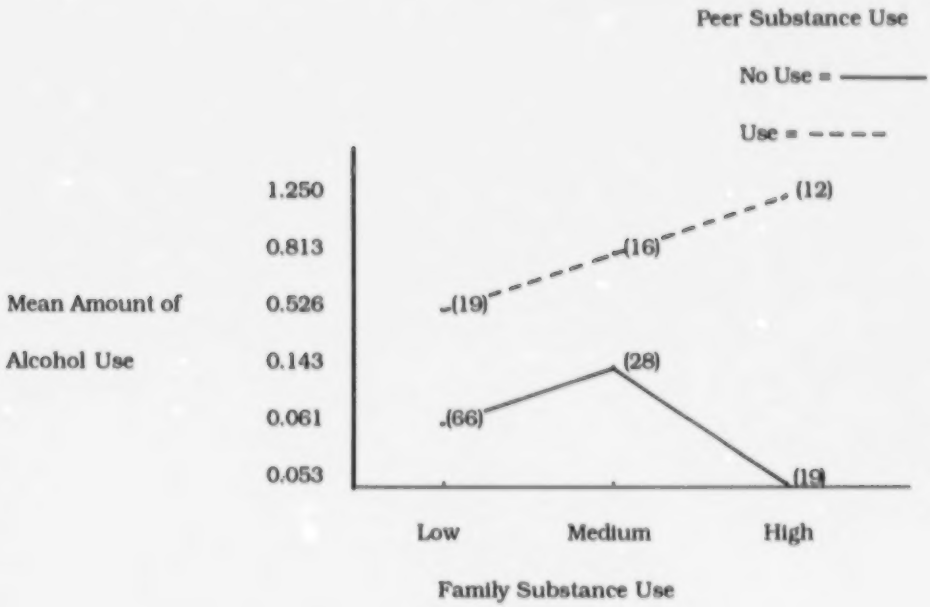
2. subjects whose peers were users and who had an average to poor attitude towards family with high family substance use reported numerically the highest use, and

3. for both levels of attitude towards family, subjects whose peers were non-users but whose family substance use was high reported numerically lower use than those whose peers were users but whose family substance use was high.

The interaction between peer substance use and family substance use for the dependent variable amount of alcohol use was depicted in a profile plot. Figure 5 contains mean amount of alcohol use and curves for peer substance use.

Figure 5

The Interaction Between Peer Substance Use and Family Substance Use for the Dependent Variable Amount of Alcohol Use



The interaction between peer substance use and family substance use for the dependent variable amount of alcohol use was ordinal. The information cited in Figure 5 indicated the following:

1. subjects whose peers were non-users but whose family use was high reported numerically the lowest amount of use of any group,

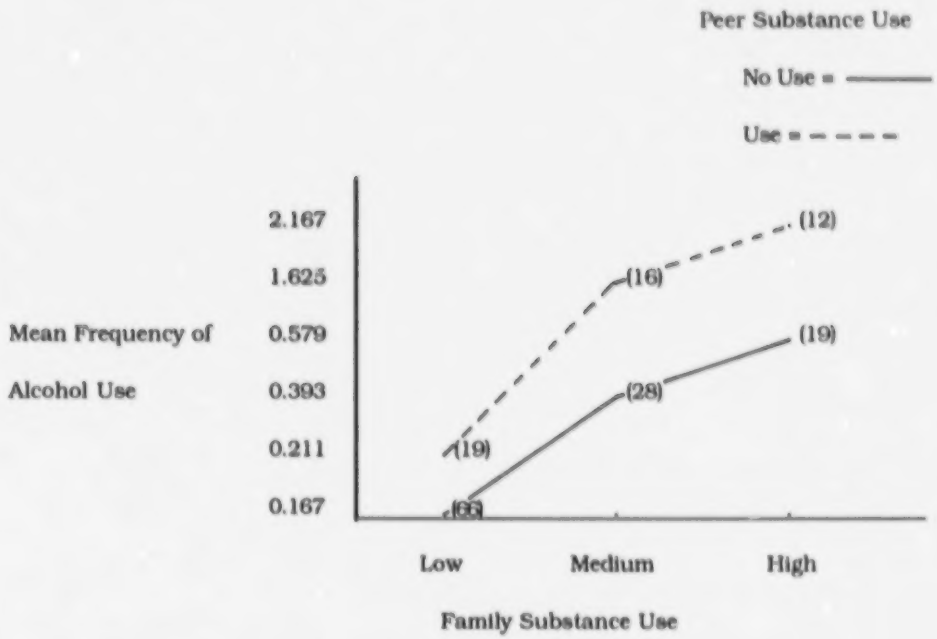
2. subjects whose peers were users and whose family use was high reported numerically the highest amount of use of any group, and

3. for all three levels of family substance use, subjects whose peers were non-users reported numerically lower amount of use than those whose peers were users.

The interaction between peer substance use and family substance use for the dependent variable frequency of alcohol use was depicted in a profile plot. Figure 6 contains the mean frequency of alcohol use and curves for peer substance use.

Figure 6

The Interaction Between Peer Substance Use and Family Substance Use for the Dependent Variable Frequency of Alcohol Use



The interaction between peer substance use and family substance use for the dependent variable frequency of alcohol use was ordinal. The information cited in Figure 6 indicated the following:

1. subjects whose peers were non-users and whose family substance use was low reported numerically the lowest frequency of use of any group, and

2. subjects whose peers were users and whose family substance use was high reported numerically the highest frequency of use of any group.

It was hypothesized in composite null hypothesis number two that the differences among the mean substance use according to peer substance use, family substance use, and self-concept would not be statistically significant. Information pertaining to composite null hypothesis number two was presented in Table 2. The following were cited in Table 2: variables, sample sizes, means, standard deviations, F values, and p levels.

Table 2

A Comparison of Mean Substance Use According to Peer Substance Use, Family Substance Use, and Self-Concept Employing a Three-Way Analysis of Variance

Variable	n	M*	S	F value	p level
Number of Cigarettes Smoked					
Peer Substance Use A					
No use (reported)	113	0.009[a]	0.09	13.93	.0003
Use (reported)	47	0.191[b]	0.54		
Family Substance Use B					
Low**	85	0.024	0.22		
Medium	44	0.068	0.33	2.60	.0778
High	31	0.161	0.45		
Self-Concept D					
Very positive***	124	0.032[a]	0.22	4.47	.0361
Average to Poor	36	0.167[b]	0.51		
Interactions					
AxB				1.81	.1677
AxD				6.21	.0138
BxD				3.27	.0407
AxBxD				3.81	.0244

(Continued)

Table 2 (Continued)

Variable	n	M	S	F value	p level
		Frequency of Cigarette Use			
Peer Substance Use A					
No use (reported)	113	0.018[a]	0.19	10.15	.0018
Use (reported)	47	0.234[b]	0.67		
Family Substance Use B					
Low	85	0.035[a]	0.33		
Medium	44	0.045[a]	0.21	3.57	.0307
High	31	0.258[b]	0.68		
Self-Concept D					
Very positive	124	0.056	0.37	1.13	.2899
Average to Poor	36	0.167	0.51		
Interactions					
A x B				1.87	.1578
A x D				2.65	.1055
B x D				1.63	.2003
A x B x D				2.59	.0781

(Continued)

Table 2 (Continued)

Variable	n	M	S	F value	p level
Use of Smokeless Tobacco					
Peer Substance Use A					
No use (reported)	113	0.018[a]	0.19	8.91	.0033
Use (reported)	47	0.255[b]	1.21		
Family Substance Use B					
Low	85	0.000[a]	0.00		
Medium	44	0.046[a]	0.30	6.39	.0022
High	31	0.387[b]	1.48		
Self-Concept D					
Very positive	124	0.016[a]	0.18	8.91	.0033
Average to Poor	36	0.333[b]	1.37		
Interactions					
A x B				4.83	.0093
A x D				11.20	.0010
B x D				4.83	.0093
A x B x D				6.39	.0022

(Continued)

Table 2 (Continued)

Variable	n	M	S	F value	p level
		Amount of Alcohol Use			
Peer Substance Use A					
No use (reported)	113	0.080[a]	0.30	33.10	.0001
Use (reported)	47	0.809[b]	1.33		
Family Substance Use B					
Low	85	0.165[d]	0.67		
Medium	44	0.386	0.89	3.53	.0317
High	31	0.516[e]	1.06		
Self-Concept D					
Very positive	124	0.210	0.68	3.43	.0661
Average to Poor	36	0.583	1.18		
Interactions					
A x B				2.95	.0554
A x D				4.91	.0282
B x D				5.14	.0070
A x B x D				4.72	.0103

(Continued)

Table 2 (Continued)

Variable	n	M	S	F value	p level
Frequency of Alcohol Use					
Peer Substance Use A					
No use (reported)	113	0.292[a]	0.80	28.26	.0001
Use (reported)	47	1.191[b]	1.41		
Family Substance Use B					
Low	85	0.176[a]	0.68		
Medium	44	0.841[b]	1.20	14.99	.0001
High	31	1.194[b]	1.42		
Self-Concept D					
Very positive	124	0.484	1.05	0.05	.8218
Average to Poor	36	0.806	1.21		
Interactions					
A x B				8.12	.0005
A x D				0.08	.7823
B x D				2.78	.0655
A x B x D				0.27	.7633

* The larger the value, the greater the use.

**Low -- never used or used one drug only on special occassions; medium -- ranged from use of only two drugs once or more a year, to daily use of only one drug; high -- ranged from multiple drug use with one used at least once or more a month, to multiple drug use with at least one used daily.

***Very positive -- scored 13 or above on PAIC-Self; average to poor -- scored below 13 on PAIC-Self.

abc Unlike symbols indicate difference statistically significant at .05 level according to Bonferroni (Dunn) t test for means.

def Unlike symbols indicate difference statistically significant at .05 level according to Duncan's Multiple Range test for means.

Twenty-two of the 35 p values were statistically significant at the .05 level; therefore, the null hypotheses for these comparisons were rejected. Eleven of the 22 significant comparisons were main effects (eight were recurring). The following main effects were statistically significant and not recurring:

1. family substance use for the dependent variable amount of alcohol use, and

2. self-concept for the dependent variables number of cigarettes smoked and use of smokeless tobacco.

The information cited in Table 2 indicated the following for non-recurring main effects:

1. subjects whose families were low or medium users reported significantly less use for amount of alcohol use, and

2. subjects whose self-concept was very positive reported significantly less number of cigarettes smoked and use of smokeless tobacco.

Eleven interactions were statistically significant, two were recurring. The following nine interactions were new:

1. peer substance use and self-concept for the dependent variable number of cigarettes smoked,

2. family substance use and self-concept for the dependent variable number of cigarettes smoked,

3. peer substance use, family substance use, and self-concept for the dependent variable number of cigarettes smoked,

4. peer substance use and self-concept for the dependent variable use of smokeless tobacco,

5. family substance use and self-concept for the dependent variable use of smokeless tobacco,

6. peer substance use, family substance use, and self-concept for the dependent variable use of smokeless tobacco,

7. peer substance use and self-concept for the dependent variable amount of alcohol use,

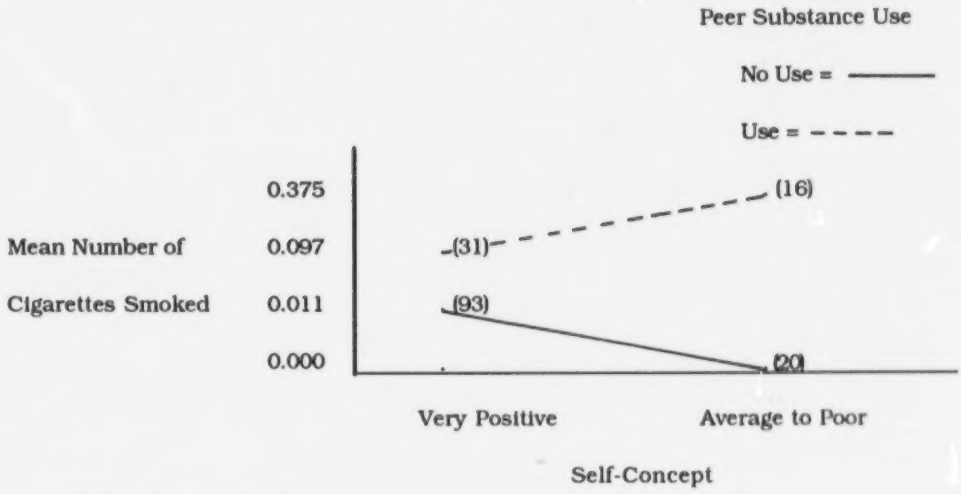
8. family substance use and self-concept for the dependent variable amount of alcohol use, and

9. peer substance use, family substance use, and self-concept for the dependent variable amount of alcohol use.

The interaction between peer substance use and self-concept for the dependent variable number of cigarettes smoked was depicted in a profile plot. Figure 7 contains mean number of cigarettes smoked and curves for peer substance use.

Figure 7

The Interaction Between Peer Substance Use and Self-Concept for the Dependent Variable Number of Cigarettes Smoked



The interaction between peer substance use and self-concept for the dependent variable number of cigarettes smoked was ordinal. The information cited in Figure 7 indicated the following:

1. subjects whose peers were non-users and who had average to poor self-concept reported no use,

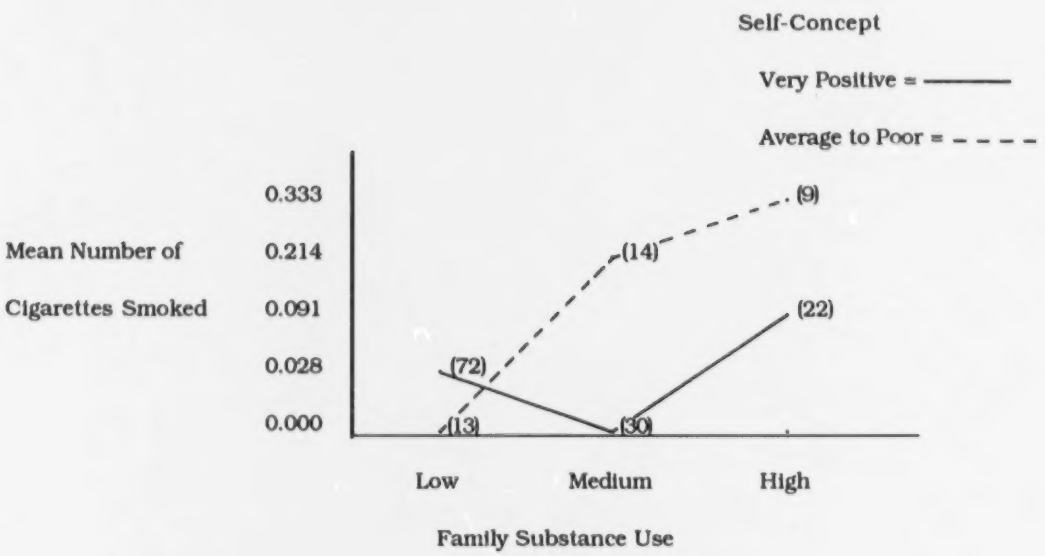
2. subjects whose peers were users and who had average to poor self-concept reported numerically the highest number of any group, and

3. for both levels of self-concept, subjects whose peers were non-users reported a numerically lower number than those whose peers were users.

The interaction between family substance use and self-concept for the dependent variable number of cigarettes smoked was depicted in a profile plot. Figure 8 contains mean number of cigarettes smoked and curves for self-concept.

Figure 8

The Interaction Between Family Substance Use and Self-Concept for the Dependent Variable Number of Cigarettes Smoked



The interaction between family substance use and self-concept for the dependent variable number of cigarettes smoked was disordinal. The information cited in Figure 8 indicated the following:

1. subjects with average to poor self-concept whose family substance use was high reported numerically the highest number used,

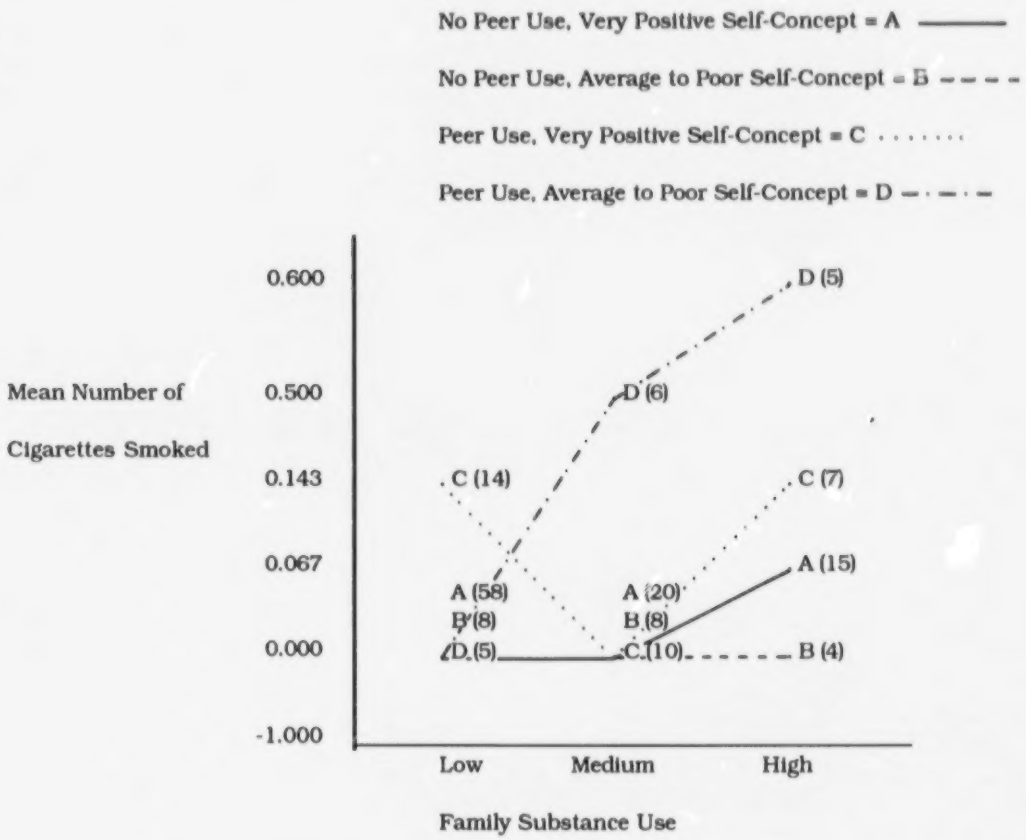
2. subjects with very positive self-concept whose family substance use was low to medium reported a numerically lower number used than subjects with very positive self-concept whose family substance use was high, and

3. subjects with average to poor self-concept whose family substance use was low reported no use.

The interaction among peer substance use, family substance use, and self-concept for the dependent variable number of cigarettes smoked was depicted in a profile plot. Figure 9 contains mean number of cigarettes smoked and curves for peer substance use and self-concept.

Figure 9

The Interaction Among Peer Substance Use, Family Substance Use, and Self-Concept for the Dependent Variable Number of Cigarettes Smoked



The interaction among peer substance use, family substance use, and self-concept for the dependent variable number of cigarettes smoked was disordinal. The information cited in Figure 9 indicated the following:

1. subjects whose peers were users, who had average to poor self-concept, and whose family substance use was high reported

numerically the highest use,

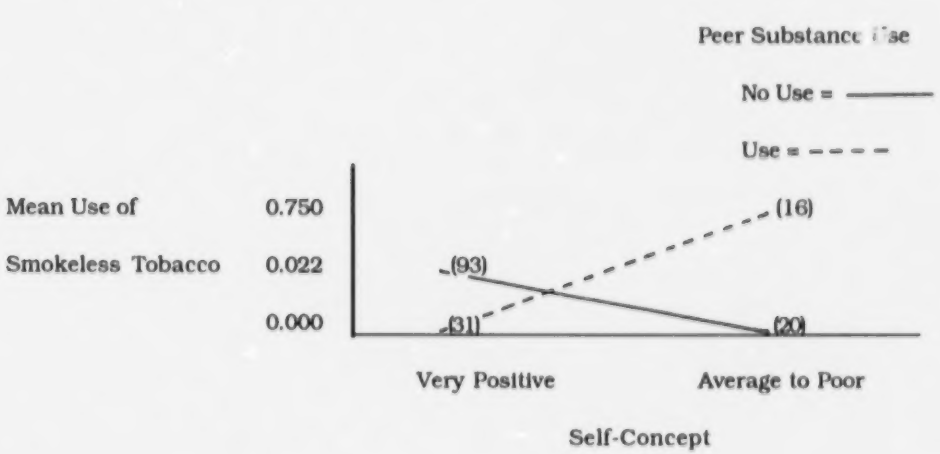
2. subjects whose peers were non-users, who had very positive self-concept, and whose family substance use was low and medium reported a numerically lower use than those whose peers were non-users, who had very positive self-concepts, and whose family substance use was high, and

3. for subjects whose family substance use was low, those with peers who were users and who had very positive self-concepts reported numerically higher use than the other groups.

The interaction between peer substance use and self-concept for the dependent variable use of smokeless tobacco was depicted in a profile plot. Figure 10 contains mean use of smokeless tobacco and curves for peer substance use.

Figure 10

The Interaction Between Peer Substance Use and Self-Concept for the Dependent Variable Use of Smokeless Tobacco



The interaction between peer substance use and self-concept for the dependent variable use of smokeless tobacco was disordinal. The information cited in Figure 10 indicated the following:

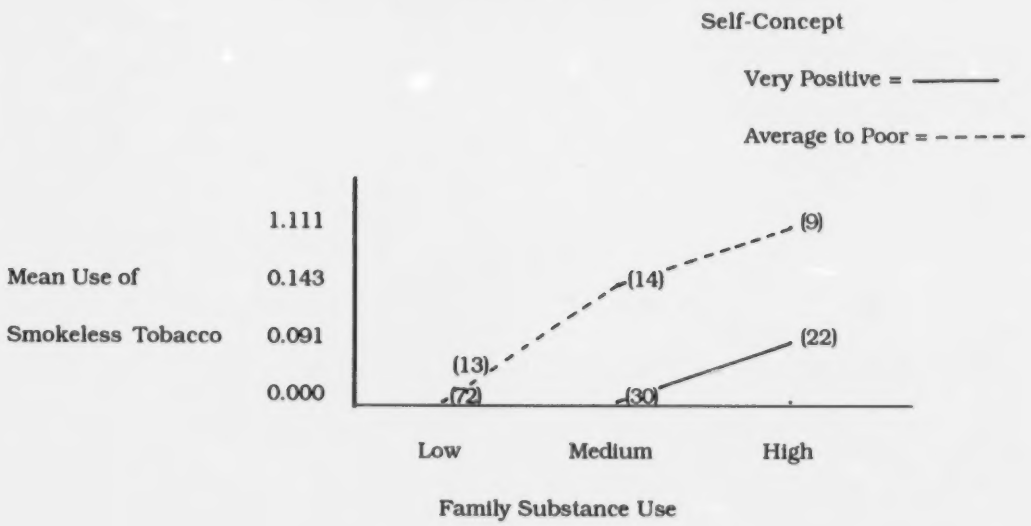
1. subjects whose peers were users and who had average to poor self-concept reported numerically the highest use, and

2. subjects with very positive self-concepts with peers who were users, and subjects with average to poor self-concepts with peers who were non-users reported no use.

The interaction between family substance use and self-concept for the dependent variable use of smokeless tobacco was depicted in a profile plot. Figure 11 contains mean use of smokeless tobacco and curves for self-concept.

Figure 11

The Interaction Between Family Substance Use and Self-Concept for the Dependent Variable Use of Smokeless Tobacco



The interaction between family substance use and self-concept for the dependent variable use of smokeless tobacco was ordinal. The information cited in Figure 11 indicated the following:

1. for subjects whose family substance use was low, those with very positive and average to poor self-concept reported no use of smokeless tobacco,

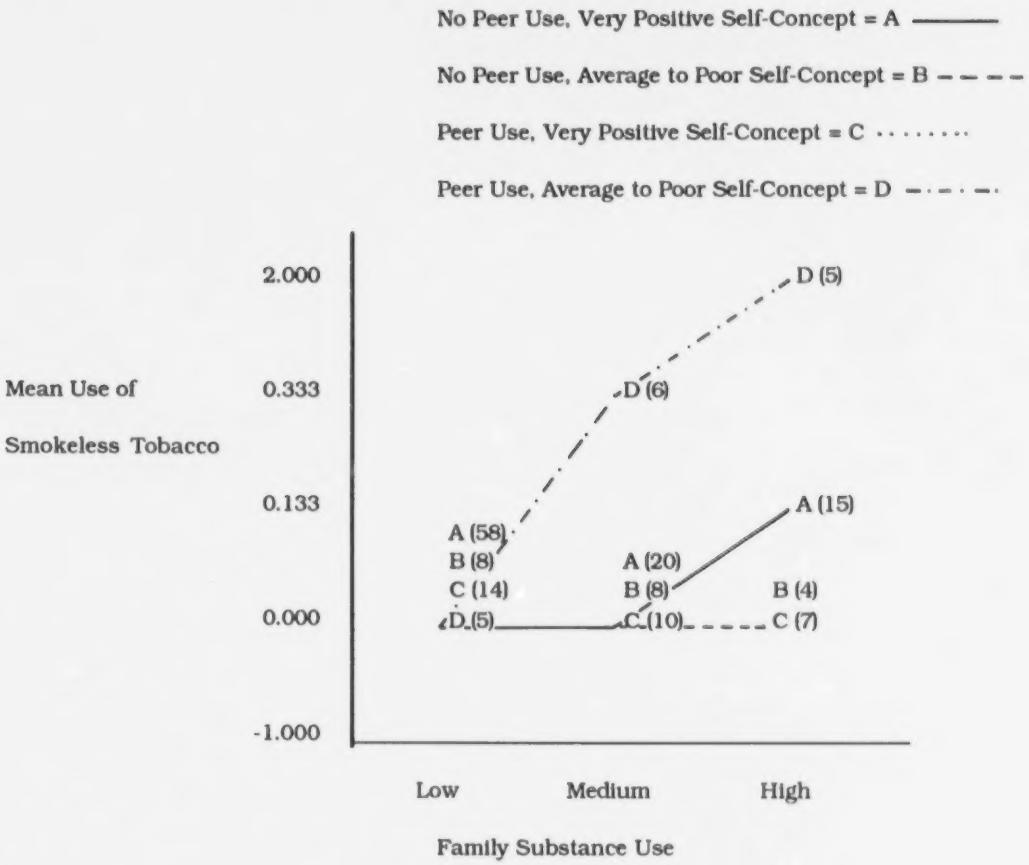
2. subjects with average to poor self-concept whose family substance use was high reported numerically the highest use, and

3. subjects with very positive self-concepts whose family substance use was high reported numerically lower use than subjects with average to poor self-concept whose family use was medium or high.

The interaction among peer substance use, family substance use, and self-concept for the dependent variable use of smokeless tobacco was depicted in a profile plot. Figure 12 contains mean use of smokeless tobacco and curves for peer substance use and self-concept.

Figure 12

The Interaction Among Peer Substance Use, Family Substance Use, and Self-Concept for the Dependent Variable Use of Smokeless Tobacco



The interaction among peer substance use, family substance use, and self-concept for the dependent variable use of smokeless tobacco was ordinal. The information cited in Figure 12 indicated the following:

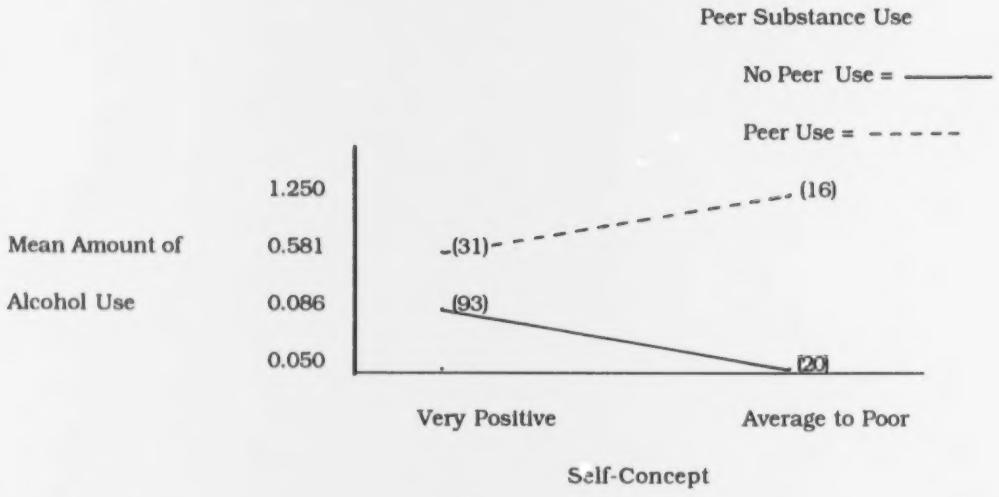
1. subjects with average to poor self-concept whose peers were users and whose family substance use was high reported numerically the highest use of smokeless tobacco, and

2. for all combinations of peer substance use and self-concept, subjects whose family substance use was low reported no use of smokeless tobacco.

The interaction between peer substance use and self-concept for the dependent variable amount of alcohol use was depicted in a profile plot. Figure 13 contains mean amount of alcohol use and curves for peer substance use.

Figure 13

The Interaction Between Peer Substance Use and Self-Concept for the Dependent Variable Amount of Alcohol Use



The interaction between peer substance use and self-concept for the dependent variable amount of alcohol use was ordinal. The information cited in Figure 13 indicated the following:

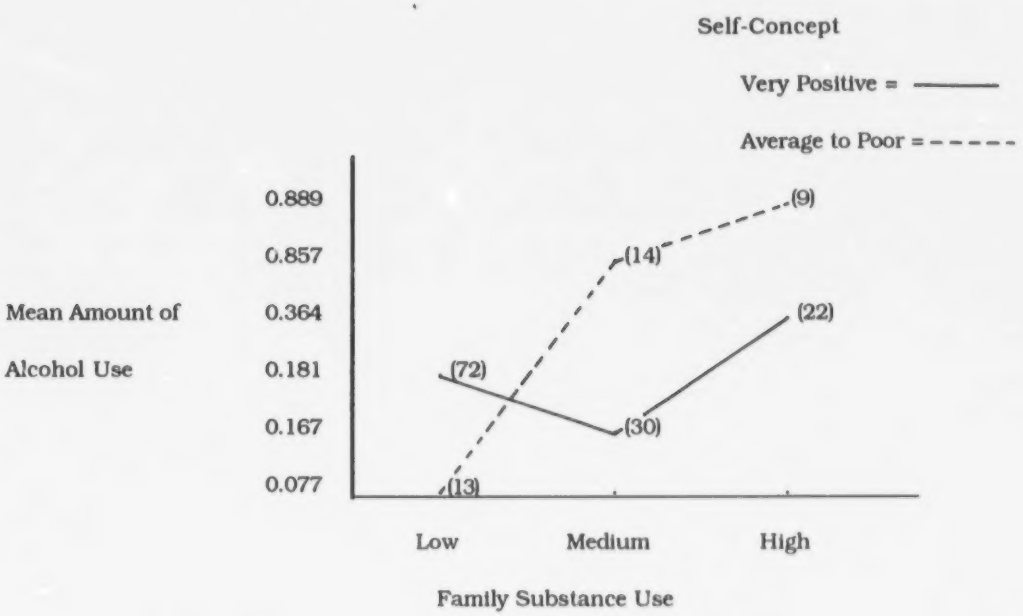
1. subjects with average to poor self-concept whose peers were users reported numerically higher use than other groups, and

2. subjects with average to poor self-concept whose peers were non-users reported a numerically lower use than other groups.

The interaction between family substance use and self-concept for the dependent variable amount of alcohol use was depicted in a profile plot. Figure 14 contains mean amount of alcohol use and curves for self-concept.

Figure 14

The Interaction Between Family Substance Use and Self-Concept for the Dependent Variable Amount of Alcohol Use



The interaction between family substance use and self-concept for the dependent variable amount of alcohol use was disordinal. The information cited in Figure 14 indicated the following:

1. subjects with average to poor self-concept whose family substance use was low reported numerically the lowest use of all the groups,

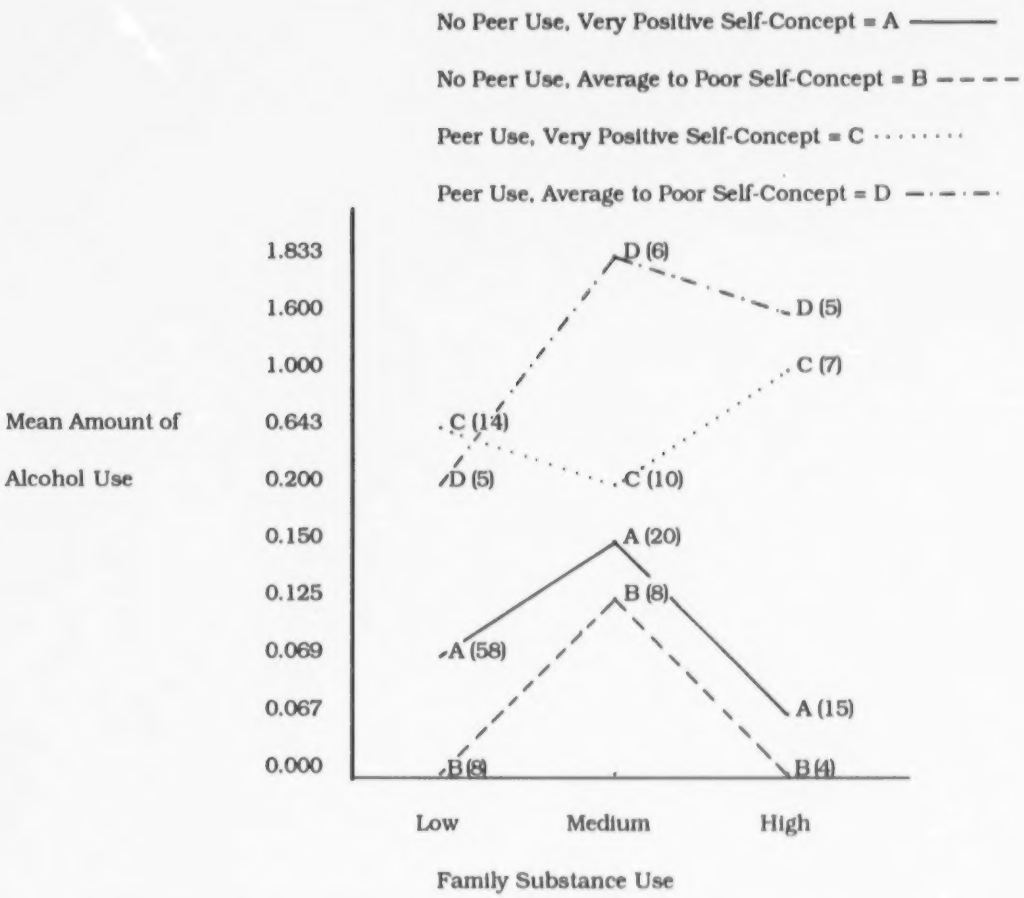
2. subjects with average to poor self-concept whose family substance use was high reported numerically the highest use of all the groups, and

3. subjects with very positive self-concept whose family substance use was high reported a numerically higher use than those with very positive self-concepts whose family use was medium or low.

The interaction among peer substance use, family substance use, and self-concept for the dependent variable amount of alcohol use was depicted in a profile plot. Figure 15 contains mean amount of alcohol use and curves for peer substance use and self-concept.

Figure 15

The Interaction Among Peer Substance Use, Family Substance Use, and Self-Concept for the Dependent Variable Amount of Alcohol Use



The interaction among peer substance use, family substance use, and self-concept for the dependent variable amount of alcohol use was disordinal. The information cited in Figure 15 indicated the following:

1. for both levels of self-concept, subjects whose peers were non-users reported a numerically lower use for all levels of family substance use than subjects whose peers were users,

2. subjects with average to poor self-concept whose peers were users and whose family substance use was medium reported numerically the highest use, and

3. subjects with average to poor self-concept whose peers were non-users and whose famiy substance use was low or high reported numerically the lowest use.

It was hypothesized in composite null hypothesis number three that the differences among the mean substance use according to peer substance use, attitude towards family, and self-concept would not be statistically significant. Information pertaining to composite null hypothesis number three was presented in Table 3. The following were cited in Table 3: variables, sample sizes, means, standard deviations, F values, and p levels.

Table 3

A Comparison of Mean Substance Use According to Peer Substance Use, Attitude Towards Family, and Self-Concept Employing a Three-Way Analysis of Variance

Variable	n	M*	S	F value	p level
Number of Cigarettes Smoked					
Peer Substance Use A					
No use (reported)	113	0.009[a]	0.09	4.53	.0349
Use (reported)	47	0.191[b]	0.54		
Attitude Towards Family C					
Very Positive**	139	0.058	0.29	0.49	.4833
Average to Poor	21	0.095	0.44		
Self-Concept D					
Very positive***	124	0.032	0.22	2.59	.1098
Average to Poor	36	0.167	0.51		
Interactions					
A x C				0.41	.5213
A x D				2.78	.0973
C x D				0.02	.9024
A x C x D				0.03	.8554

(Continued)

Table 3 (Continued)

Variable	n	M	S	F value	p level
Frequency of Cigarette Use					
Peer Substance Use A					
No use (reported)	113	0.018	0.19	2.90	.0908
Use (reported)	47	0.234	0.67		
Attitude Towards Family C					
Very Positive	139	0.079	0.40	0.46	.4984
Average to Poor	21	0.095	0.44		
Self-Concept D					
Very positive	124	0.056	0.37	1.11	.2941
Average to Poor	36	0.167	0.51		
Interactions					
A x C				0.35	.5567
A x D				1.31	.2551
C x D				0.00	.9520
A x C x D				0.00	.9766

(Continued)

Table 3 (Continued)

Variable	n	M	S	F value	p level
Use of Smokeless Tobacco					
Peer Substance Use A					
No use (reported)	113	0.018	0.19	3.50	.0632
Use (reported)	47	0.255	1.21		
Attitude Towards Family C					
Very Positive	139	0.043	0.27	0.65	.4204
Average to Poor	21	0.381	1.75		
Self-Concept D					
Very positive	124	0.016	0.18	3.50	.0632
Average to Poor	36	0.333	1.37		
Interactions					
A x C				0.74	.3895
A x D				3.71	.0559
C x D				0.74	.3895
A x C x D				0.65	.4204

(Continued)

Table 3 (Continued)

Variable	n	M	S	F value	p level
		Amount of Alcohol Use			
Peer Substance Use A					
No use (reported)	113	0.080[a]	0.30	5.05	.0260
Use (reported)	47	0.809[b]	1.33		
Attitude Towards Family C					
Very Positive	139	0.266	0.80	0.70	.4054
Average to Poor	21	0.476	0.98		
Self-Concept D					
Very positive	124	0.210	0.68	1.64	.2022
Average to Poor	36	0.583	1.18		
Interactions					
A x C				6.00	.0154
A x D				6.18	.0140
C x D				0.77	.3813
A x C x D				0.02	.8946

(Continued)

Table 3 (Continued)

Variable	n	M	S	F value	p level
Frequency of Alcohol Use					
Peer Substance Use A					
No use (reported)	113	0.292[a]	0.80	7.36	.0074
Use (reported)	47	1.191[b]	1.41		
Attitude Towards Family C					
Very Positive	139	0.504	1.05	0.99	.3203
Average to Poor	21	0.905	1.34		
Self-Concept D					
Very positive	124	0.484	1.05	0.96	.3295
Average to Poor	36	0.806	1.21		
Interactions					
A x C				0.34	.5586
A x D				0.13	.7179
C x D				4.74	.0311
A x C x D				0.08	.7733

* The larger the value, the greater the use.

**Very positive -- scored 13 or above on PAIC-Family; average to poor -- scored below 13 on PAIC-Family.

***Very positive -- scored 13 or above on PAIC-Self; average to poor -- scored below 13 on PAIC-Self.

[abc] Unlike symbols indicate difference statistically significant at .05 level according to Bonferroni (Dunn) t test for means.

Six of the 35 p values were statistically significant at the .05 level; therefore, the null hypotheses for these comparisons were rejected. Three of the six significant comparisons were recurring main effects. The information cited in Table 3 indicated no additional main effects.

Three interactions were statistically significant, one was recurring. The following two interactions were new:

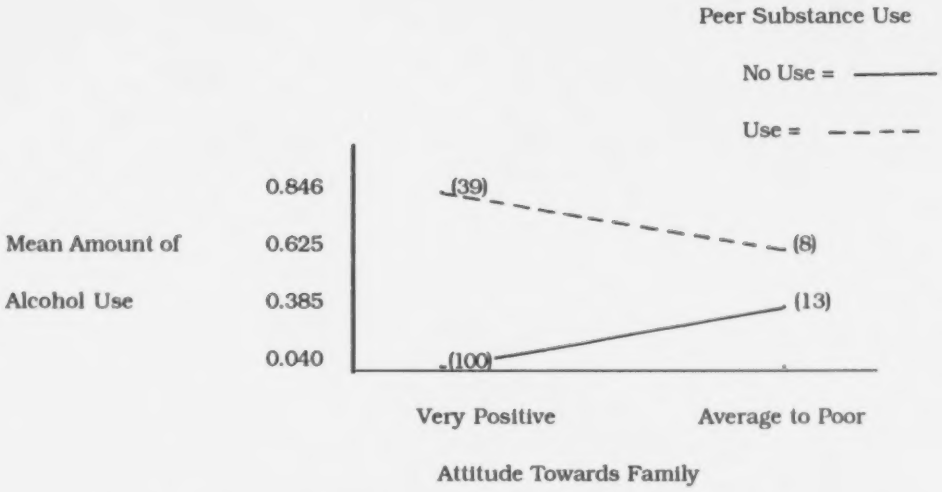
1. peer substance use and attitude towards family for the dependent variable amount of alcohol use, and

2. attitude towards family and self-concept for the dependent variable frequency of alcohol use.

The interaction between peer substance use and attitude towards famiy for the dependent variable amount of alcohol use was depicted in a profile plot. Figure 16 contains mean amount of alcohol use and curves for peer substance use.

Figure 16

The Interaction Between Peer Substance Use and Attitude Towards Family for the Dependent Variable Amount of Alcohol Use



The interaction between peer substance use and attitude towards family for the dependent variable amount of alcohol use was ordinal. The information cited in Figure 16 indicated the following:

1. subjects whose peers were non-users and who had a very positive attitude towards family reported numerically the lowest use,

2. subjects whose peers were users and who had a very positive attitude towards family reported numerically the highest use, and

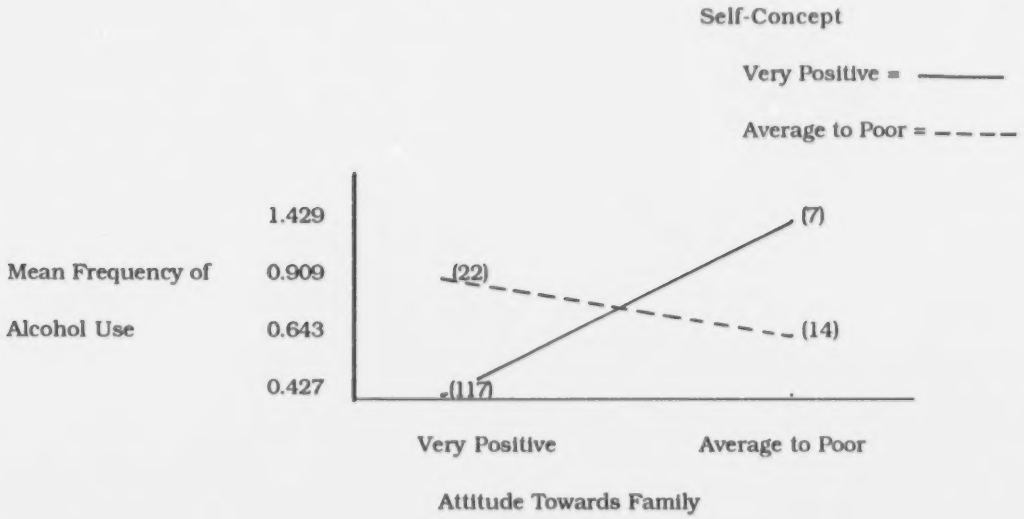
3. for both levels of attitude towards family, subjects whose peers were non-users reported numerically a lower use than those whose peers were users.

The interaction between attitude towards family and self-concept for the dependent variable frequency of alcohol use was

depicted in a profile plot. Figure 17 contains frequency of alcohol use and curves for self-concept.

Figure 17

The Interaction Between Attitude Towards Family and Self-Concept for the Dependent Variable Frequency of Alcohol Use



The interaction between attitude towards family and self-concept for the dependent variable frequency of alcohol use was disordinal. The information cited in Figure 17 indicated the following:

1. subjects with very positive self-concept and very positive attitude towards family reported numerically the lowest frequency of use, and

2. subjects with very positive self-concept and average to poor attitude towards family reported numerically the highest frequency of use.

It was hypothesized in composite null hypothesis number four that the differences among the mean substance use according to family substance use, attitude towards family, and self-concept would not be statistically significant. Information pertaining to composite null hypothesis number four was presented in Table 4. The following were cited in Table 4: variables, sample sizes, means, standard deviations, F values, and p levels.

Table 4

A Comparison of Mean Substance Use According to Family Substance Use, Attitude Towards Family, and Self-Concept Employing a Three-Way Analysis of Variance

Variable	n	M*	S	F value	p level
Number of Cigarettes Smoked					
Family Substance Use B					
Low**	85	0.024	0.22		
Medium	44	0.068	0.33	2.14	.1216
High	31	0.161	0.45		
Attitude Towards Family C					
Very Positive***	139	0.058	0.29	0.11	.7390
Average to Poor	21	0.095	0.44		
Self-Concept D					
Very positive****	124	0.032	0.22	2.97	.0868
Average to Poor	36	0.167	0.51		
Interactions					
B x C				0.71	.4914
B x D				1.31	.2722
C x D				0.04	.8377
B x C x D				1.50	.2269

(Continued)

Table 4 (Continued)

Variable	n	M	S	F value	p level
Frequency of Cigarette Use					
Family Substance Use B					
Low	85	0.035	0.33		
Medium	44	0.045	0.21	2.55	.0817
High	31	0.258	0.68		
Attitude Towards Family C					
Very Positive	139	0.079	0.40	0.32	.5736
Average to Poor	21	0.095	0.44		
Self-Concept D					
Very positive	124	0.056	0.37	1.56	.2140
Average to Poor	36	0.167	0.51		
Interactions					
B x C				0.05	.9549
B x D				1.04	.3566
C x D				0.04	.8355
B x C x D				0.46	.6345

(Continued)

Table 4 (Continued)

Variable	n	M	S	F value	p level
Use of Smokeless Tobacco					
Family Substance Use B					
Low	85	0.000[a]	0.00		
Medium	44	0.046[a]	0.30	6.08	.0029
High	31	0.387[b]	1.48		
Attitude Towards Family C					
Very Positive	139	0.043	0.27	1.43	.2339
Average to Poor	21	0.381	1.75		
Self-Concept D					
Very positive	124	0.016[a]	0.18	5.61	.0191
Average to Poor	36	0.333[b]	1.37		
Interactions					
B x C				2.58	.0793
B x D				5.02	.0077
C x D				1.97	.1622
B x C x D				3.35	.0378

(Continued)

Table 4 (Continued)

Variable	n	M	S	F value	p level
		Amount of Alcohol Use			
Family Substance Use B					
Low	85	0.165	0.67		
Medium	44	0.386	0.89	0.30	.7445
High	31	0.516	1.06		
Attitude Towards Family C					
Very Positive	139	0.266	0.80	0.70	.4029
Average to Poor	21	0.476	0.98		
Self-Concept D					
Very positive	124	0.210	0.68	0.02	.8767
Average to Poor	36	0.583	1.18		
Interactions					
B x C				1.13	.3247
B x D				4.20	.0169
C x D				3.15	.0778
B x C x D				2.93	.0563

(Continued)

Table 4 (Continued)

Variable	n	M	S	F value	p level
		Frequency of Alcohol Use			
Family Substance Use B					
Low	85	0.176	0.68		
Medium	44	0.841	1.20	0.81	.4461
High	31	1.194	1.42		
Attitude Towards Family C					
Very Positive	139	0.504	1.05	0.64	.4257
Average to Poor	21	0.905	1.34		
Self-Concept D					
Very positive	124	0.484	1.05	0.63	.4276
Average to Poor	36	0.806	1.21		
Interactions					
B x C				4.87	.0090
B x D				5.97	.0032
C x D				2.44	.1207
B x C x D				4.55	.0121

* The larger the value, the greater the use.

**Low -- never used or used one drug only on special occassions; medium -- ranged from use of only two drugs once or more a year, to daily use of only one drug; high -- ranged from multiple drug use with one used at least once or more a month, to multiple drug use with at least one used daily.

***Very positive -- scored 13 or above on PAIC-Family; average to poor -- scored below 13 on PAIC-Family.

****Very positive -- scored 13 or above on PAIC-Self; average to poor -- scored below 13 on PAIC-Self.

abc Unlike symbols indicate difference statistically significant at .05 level according to Bonferroni (Dunn) t test for means.

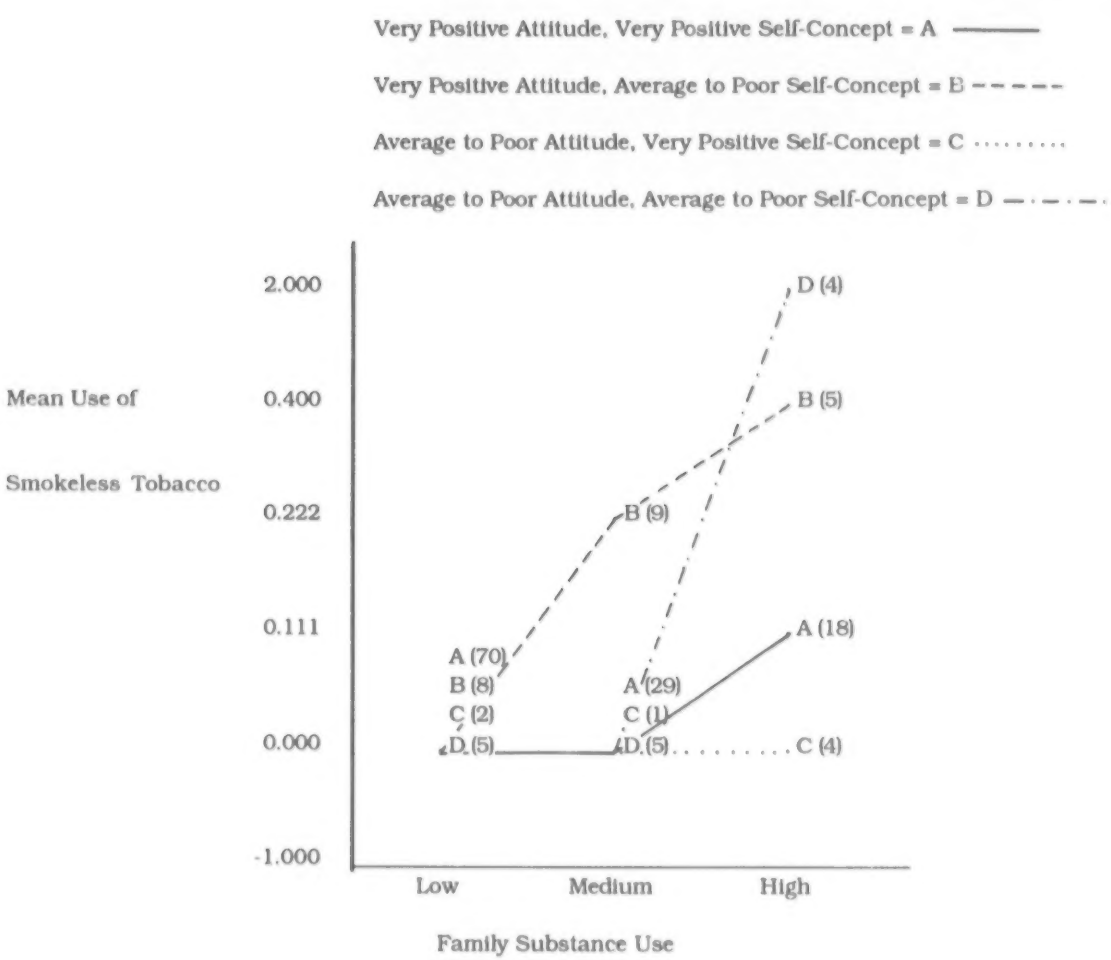
Eight of the 35 p values were statistically significant at the .05 level; therefore, the null hypotheses for these comparisons were rejected. Two of the eight significant comparisons were main effects (both recurring). Six interactions were statistically significant, two were recurring. The following four interactions were new:

1. family substance use, attitude towards family, and self-concept for the dependent variable use of smokeless tobacco,
2. family substance use and attitude towards family for the dependent variable frequency of alcohol use,
3. family substance use and self-concept for the dependent variable frequency of alcohol use, and
4. family substance use, attitude towards family, and self-concept for the dependent variable frequency of alcohol use.

The interaction among family substance use, attitude towards family, and self-concept for the dependent variable use of smokeless tobacco was depicted in a profile plot. Figure 18 contains mean use of smokeless tobacco and curves for attitude towards family and self-concept.

Figure 18

The Interaction Among Family Substance Use, Attitude Towards Family, and Self-Concept for the Dependent Variable Use of Smokeless Tobacco



The interaction among family substance use, attitude towards family, and self-concept for the dependent variable use of smokeless tobacco was disordinal. The information cited in Figure 18 indicated the following:

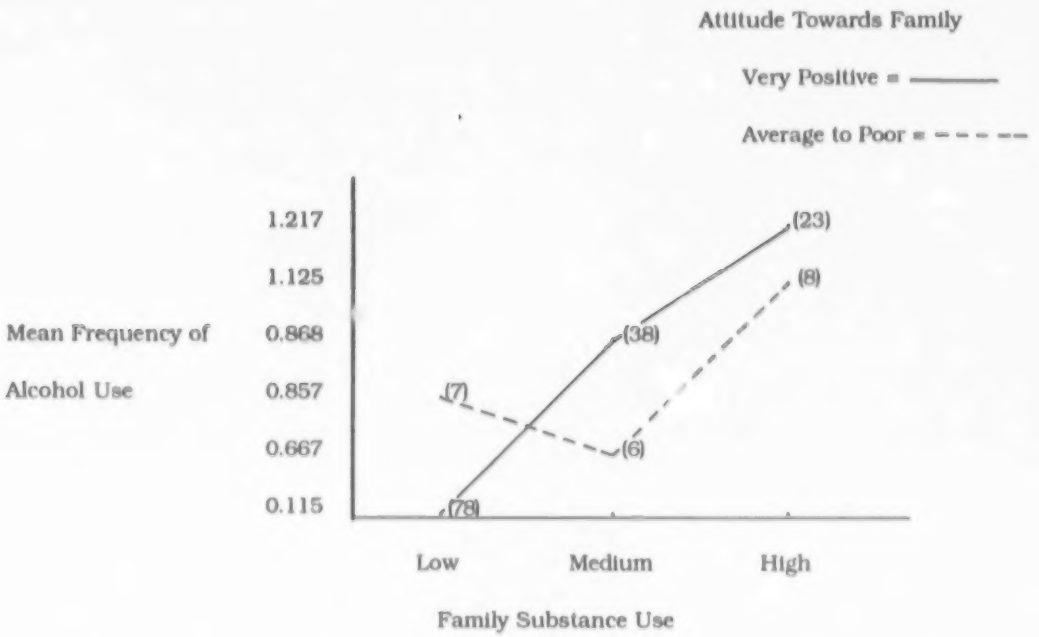
1. subjects with average to poor attitude towards family and with average to poor self-concept whose family substance use was high reported numerically the highest use of smokeless tobacco, and

2. subjects with average to poor attitude towards family and with very positive self-concept reported no use for all levels of family substance use.

The interaction between family substance use and attitude towards family for the dependent variable frequency of alcohol use was depicted in a profile plot. Figure 19 contains mean frequency of alcohol use and curves for attitude towards family.

Figure 19

The Interaction Between Family Substance Use and Attitude Towards Family for the Dependent Variable Frequency of Alcohol Use



The interaction between family substance use and attitude towards family for the dependent variable frequency of alcohol use was disordinal. The information cited in Figure 19 indicated the following:

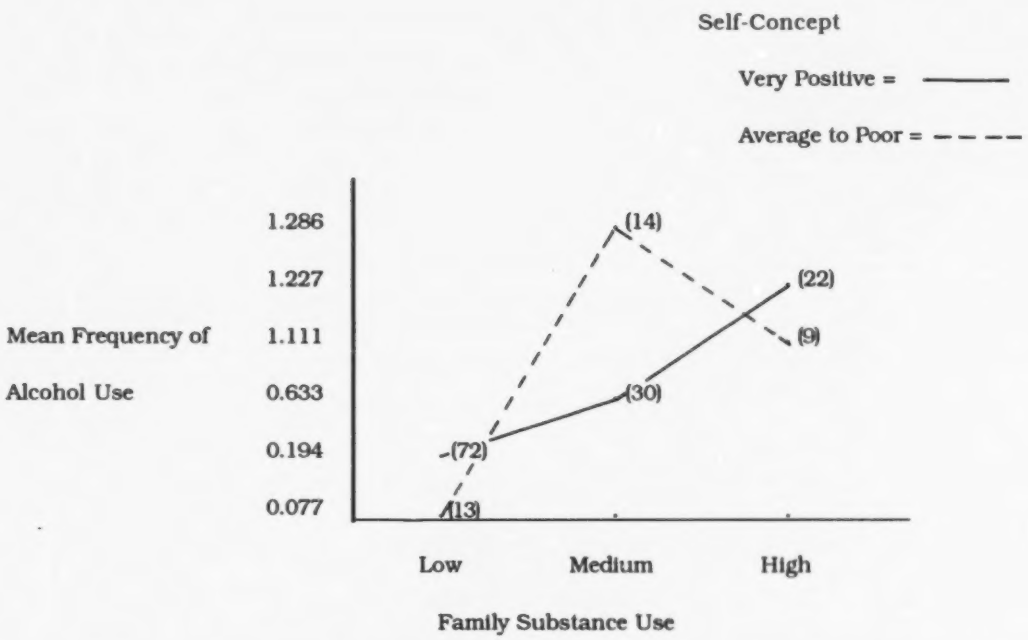
1. subjects with very positive attitude towards family whose family substance use was low reported numerically the lowest frequency of use, and

2. subjects with very positive attitude towards family whose family substance use was high reported numerically the highest frequency of use.

The interaction between family substance use and self-concept for the dependent variable frequency of alcohol use was depicted in a profile plot. Figure 20 contains mean frequency of alcohol use and curves for self-concept.

Figure 20

The Interaction Between Family Substance Use and Self-Concept for the Dependent Variable Frequency of Alcohol Use



The interaction between family substance use and self-concept for the dependent variable frequency of alcohol use was disordinal. The information cited in Figure 20 indicated the following:

1. subjects with average to poor self-concepts with low family substance use reported numerically the lowest frequency of all the groups,

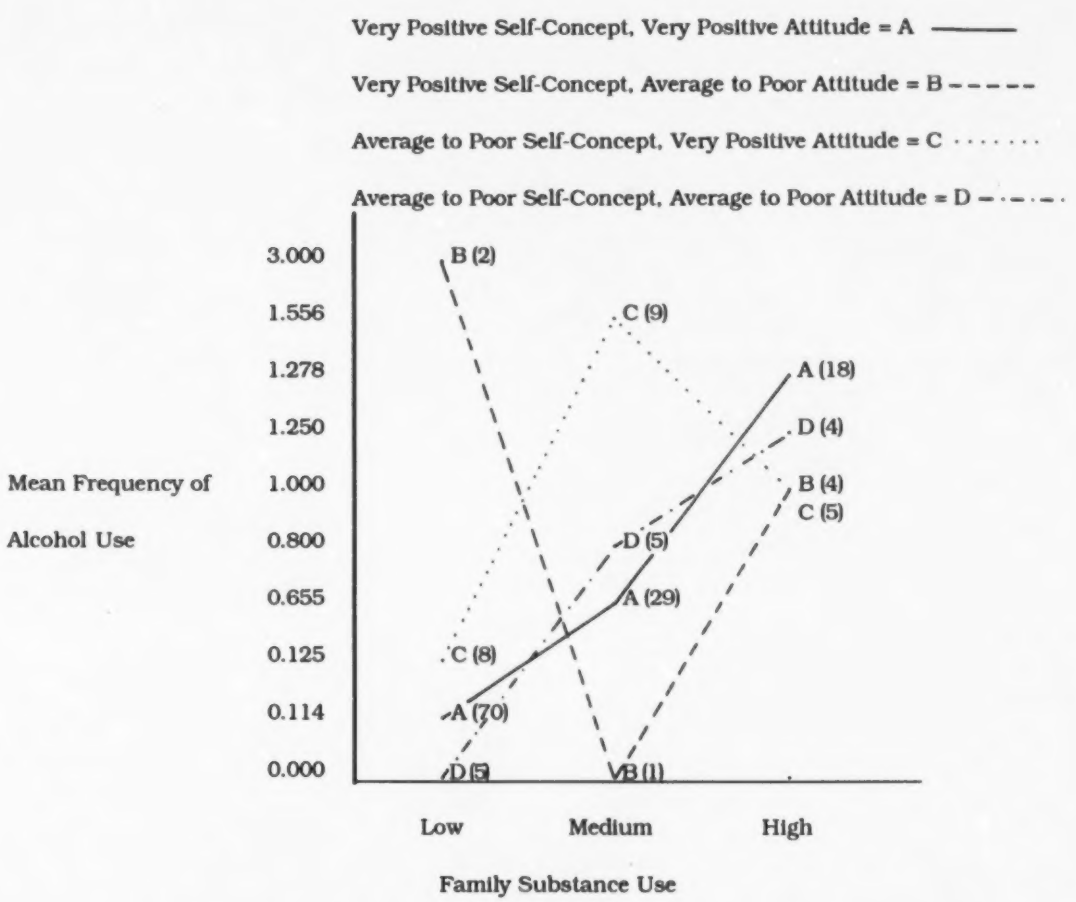
2. subjects with average to poor self-concepts with medium family substance use reported numerically the highest frequency of all the groups, and

3. subjects with very positive self-concept whose family substance use was high reported numerically higher frequency than subjects with average to poor self-concept whose family substance use was high.

The interaction among family substance use, attitude towards family, and self-concept for the dependent variable frequency of alcohol use was depicted on a profile plot. Figure 21 contains mean frequency of alcohol use and curves for attitude towards family and self-concept.

Figure 21

The Interaction Among Family Substance Use, Attitude Towards Family, and Self-Concept for the Dependent Variable Frequency of Alcohol Use



The interaction among family substance use, attitude towards family, and self-concept for the dependent variable frequency of alcohol use was disordinal. The information cited in Figure 21 indicated the following:

1. subjects with very positive self-concept and average to poor attitude towards family whose family substance use was low reported numerically the highest frequency than any other group,

2. subjects with very positive self-concept and very positive attitude towards family and whose family substance use was high reported numerically higher frequency of use than all other groups whose family substance use was high, and

3. subjects with very positive self-concept and very positive attitude towards family whose family substance use was low reported numerically higher frequency of use than those who had average to poor self-concept and average to poor attitude towards family whose family substance use was low.

It was hypothesized in composite null hypothesis number five that the differences among the mean substance use according to gender, family structure, and perceived relationship with parents would not be statistically significant. Information pertaining to composite null hypothesis number five was presented in Table 5. The following were cited in Table 5: variables, sample sizes, means, standard deviations, F values, and p levels.

Table 5

A Comparison of Mean Substance Use According to Gender, Family Structure, and Perceived Relationship with Parents Employing a Three-Way Analysis of Variance

Variable	n	M*	S	F value	p level
Number of Cigarettes Smoked					
Gender E					
Male	78	0.103	0.41	1.17	.2803
Female	82	0.024	0.16		
Family Structure F					
Intact	142	0.070	0.33	2.71	.1019
Not intact	18	0.000	0.00		
Perceived Relationship with Parents G					
Very Good	95	0.042	0.29		
Good	46	0.043	0.21	1.39	.2519
Okay to Very Poor	19	0.211	0.54		
Interactions					
E x F				1.17	.2803
E x G				0.65	.5261
F x G				1.39	.2519
E x F x G				0.65	.5261

(Continued)

Table 5 (Continued)

Variable	n	M	S	F value	p value
		Frequency of Cigarette Use			
Gender E					
Male	78	0.128	0.52	1.29	.2584
Female	82	0.037	0.25		
Family Structure F					
Intact	142	0.092	0.43	2.84	.0938
Not intact	18	0.000	0.00		
Perceived Relationship with Parents G					
Very Good	95	0.042	0.32		
Good	46	0.087	0.41	1.39	.2531
Okay to Very Poor	19	0.263	0.65		
Interactions					
ExF				1.29	.2584
ExG				0.82	.4433
FxG				1.39	.2531
ExFxG				0.82	.4433

(Continued)

Table 5 (Continued)

Variable	n	M	S	F value	p value
		Use of Smokeless Tobacco			
Gender E					
Male	78	0.179[g]	0.96	4.41	.0374
Female	82	0.000[h]	0.00		
Family Structure F					
Intact	142	0.092	0 71	3.21	.0754
Not intact	18	0.056	0.24		
Perceived Relationship with Parents G					
Very Good	95	0.032[a]	0.23		
Good	46	0.022[a]	0.15	3.07	.0495
Okay to Very Poor	19	0.526[b]	1.87		
Interactions					
ExF				3.21	.0754
ExG				3.07	.0495
FxG				4.00	.0204
ExFxG				4.00	.0204

(Continued)

Table 5 (Continued)

Variable	n	M	S	F value	p value
		Amount of Alcohol Use			
Gender E					
Male	78	0.423	0.99	0.43	.5126
Female	82	0.171	0.62		
Family Structure F					
Intact	142	0.317	0.86	2.94	.0884
Not intact	18	0.111	0.47		
Perceived Relationship with Parents G					
Very Good	95	0.263	0.80		
Good	46	0.196	0.50	0.71	.4945
Okay to Very Poor	19	0.684	1.38		
Interactions					
E x F				0.04	.8422
E x G				0.28	.7584
F x G				1.38	.2537
E x F x G				0.00	.9996

(Continued)

Table 5 (Continued)

Variable	n	M	S	F value	p value
		Frequency of Alcohol Use			
Gender E					
Male	78	0.744	1.28	1.18	.2790
Female	82	0.378	0.84		
Family Structure F					
Intact	142	0.585	1.12	1.49	.2241
Not intact	18	0.333	0.84		
Perceived Relationship with Parents G					
Very Good	95	0.412	1.06		
Good	46	0.739	1.00	1.15	.3190
Okay to Very Poor	19	0.842	1.38		
Interactions					
E x F				0.31	.5756
E x G				0.31	.7363
F x G				1.95	.1457
E x F x G				0.27	.7617

* The larger the value, the greater the use.

abc Unlike symbols indicate difference statistically significant at .05 level according to Bonferroni (Dunn) t test for means.

gh Difference statistically sigificant at .05 level.

Five of the 35 p values were statistically significant at the .05 level; therefore, the null hypotheses for these comparisons were rejected. Two of the five significant comparisons were main effects. The following main effects were statistically significant:

1. gender for the dependent variable use of smokeless tobacco, and
2. perceived relationship with parents for the dependent variable use of smokeless tobacco.

The information cited in Table 5 indicated the following for main effects:

1. girls reported significantly less use of smokeless tobacco, and
2. subjects who perceived a good to very good relationship with parents reported significantly less use of smokeless tobacco.

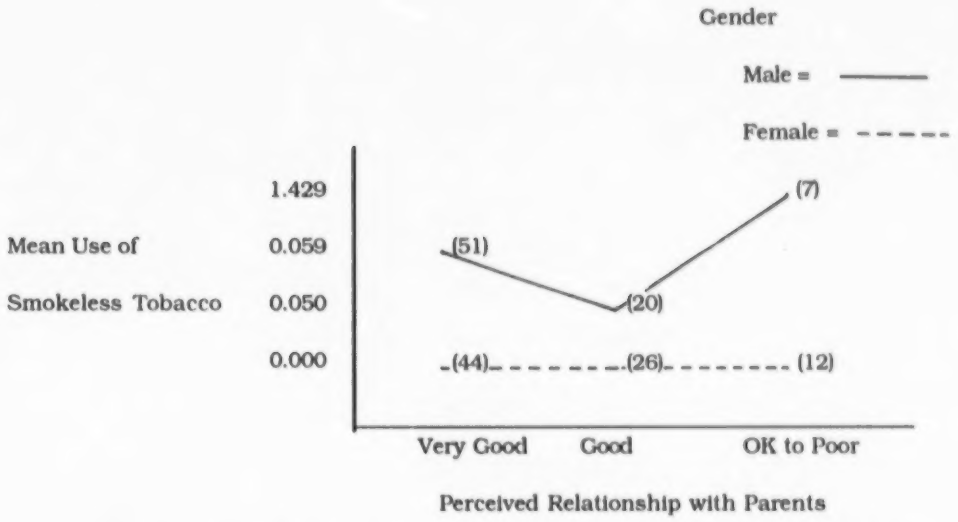
The following three interactions were statistically significant:

1. gender and family structure for the dependent variable use of smokeless tobacco,
2. gender and perceived relationship with parents for the dependent variable use of smokeless tobacco, and
3. gender, family structure, and perceived relationship with parents for the dependent variable use of smokeless tobacco.

The interaction between gender and perceived relationship with parents for the dependent variable use of smokeless tobacco was depicted in a profile plot. Figure 22 contains mean use of smokeless tobacco and curves for gender.

Figure 22

The Interaction Between Gender and Perceived Relationship with Parents for the Dependent Variable Use of Smokeless Tobacco



The interaction between gender and perceived relationship with parents for the dependent variable use of smokeless tobacco was ordinal. The information cited in Figure 22 indicated the following:

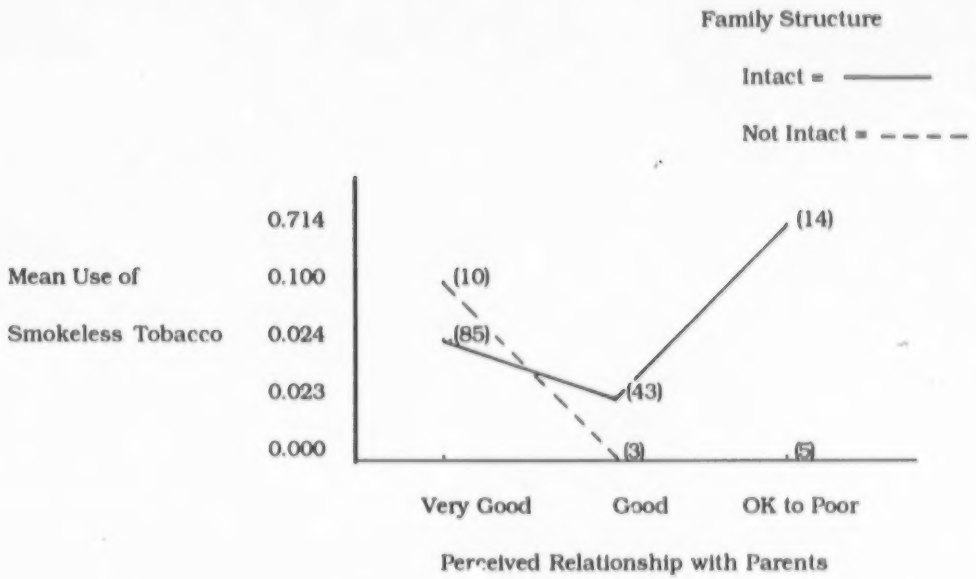
1. subjects who were female for all levels of perceived relationship with parents reported no use of smokeless tobacco, and

2. subjects who were male with OK to poor perceived relationship with parents reported numerically the highest use of smokeless tobacco.

The interaction between family structure and perceived relationship with parents for the dependent variable use of smokeless tobacco was depicted in a profile plot. Figure 23 contains mean use of smokeless tobacco and curves for family structure.

Figure 23

The Interaction Between Family Structure and Perceived Relationship with Parents for the Dependent Variable Use of Smokeless Tobacco



The interaction between family structure and perceived relationship with parents for the dependent variable use of smokeless tobacco was disordinal. The information cited in Figure 23 indicated the following:

1. subjects whose family was not intact and whose perceived relationship with parents was good and OK to poor reported no use of smokeless tobacco,

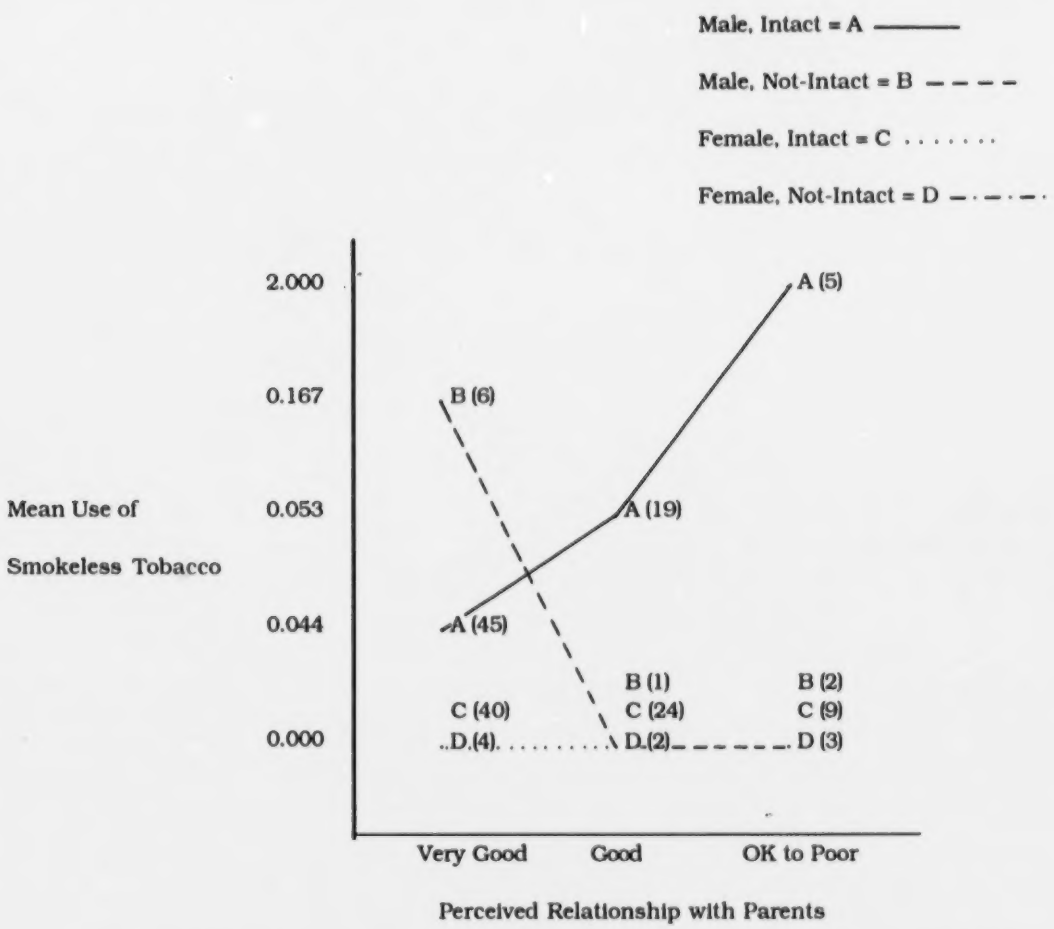
2. subjects from intact families whose perceived relationship with parents was OK to poor reported numerically the highest use of smokeless tobacco, and

3. subjects from intact families who perceived a very good relationship with parents reported numerically lower use than subjects from non-intact families who perceived a very good relationship with parents.

The interaction among gender, family structure, and perceived relationship with parents for the dependent variable use of smokeless tobacco was depicted in a profile plot. Figure 24 contains mean use of smokeless tobacco and curves for gender and family structure.

Figure 24

The Interaction Among Gender, Family Structure, and Perceived Relationship with Parents for the Dependent Variable Use of Smokeless Tobacco



The interaction among gender, family structure, and perceived relationship with parents for the dependent variable use of smokeless tobacco was disordinal. The information cited in Figure 24 indicated the following:

1. females from intact and non-intact families for all levels of perceived relationship with parents reported no use of smokeless tobacco,

2. males from non-intact families who perceived very good relationship with parents reported numerically higher use than males from non-intact families who perceived good and OK to poor relationship with parents, and

3. males from intact families who perceived OK to poor relationship with parents reported numerically the highest use of all the groups.

Discussion

Summary

The purpose of the researcher was to investigate substance use of rural Kansas fifth and sixth graders. Data were taken from 160 fifth- and sixth-grade students from five elementary schools. Seventy-one were fifth graders, 89 were sixth graders, with the total sample being comprised of 78 boys and 82 girls. The independent variables were the student's gender, family structure, perceived relationship with parents, family substance use, attitude toward family, peer substance use, and self-concept. The dependent variables were the student's number of cigarettes smoked, frequency of cigarette use, amount of alcohol use, frequency of alcohol use, and frequency of smokeless tobacco use. (The inventory included the frequency of marijuana use, but no subjects reported such use.) Five composite null hypotheses

were tested. The following design was employed with each composite null hypothesis:

composite null hypothesis number one: a 2 x 3 x 2 factorial design,

composite null hypothesis number two: a 2 x 3 x 2 factorial design,

composite null hypothesis number three: a 2 x 2 x 2 factorial design,

composite null hypothesis number four: a 3 x 2 x 2 factorial design, and

composite null hypothesis number five: a 2 x 2 x 3 factorial design.

A total of 105 comparisons and 70 recurring comparisons were made. Of the 105 total comparisons, 35 were main effects. Of the 35 main effects, 15 were statistically significant. The statistically significant ones were:

1. peer substance use for the dependent variables number of cigarettes smoked, frequency of cigarette use, use of smokeless tobacco, amount of alcohol use, and frequency of alcohol use,

2. family substance use for the dependent variables number of cigarettes smoked, frequency of cigarette use, use of smokeless tobacco, amount of alcohol use, and frequency of alcohol use,

3. attitude towards family for the dependent variable use of smokeless tobacco,

4. self-concept for the dependent variables number of cigarettes smoked and use of smokeless tobacco,

5. gender for the dependent variable use of smokeless tobacco, and

6. perceived relationship with parents for the dependent variable use of smokeless tobacco.

Of the 105 total comparisons, 70 were interactions. Of the 70 interactions, 24 were statistically significant. The statistically significant ones were:

1. peer substance use and family substance use for the dependent variables use of smokeless tobacco, amount of alcohol use, and frequency of alcohol use,

2. peer substance use and attitude towards family for the dependent variables use of smokeless tobacco and amount of alcohol use,

3. family substance use and attitude towards family for the dependent variables use of smokeless tobacco and frequency of alcohol use,

4. peer substance use, family substance use, and attitude towards family for the dependent variable use of smokeless tobacco,

5. peer substance use and self-concept for the dependent variables number of cigarettes smoked, use of smokeless tobacco, and amount of alcohol use,

6. family substance use and self-concept for the dependent variables number of cigarettes smoked, use of smokeless tobacco, amount of alcohol use, and frequency of alcohol use,

7. peer substance use, family substance use, and self-concept forthe dependent variables number of cigarettes smoked, use of smokeless tobacco, and amount of alcohol use,

8. attitude towards family and self-concept for the dependent variable frequency of alcohol use,

9. family substance use, attitude towards family, and self-concept for the dependent variables use of smokeless tobacco and frequency of alcohol use,

10. gender and perceived relationship with parents for the dependent variable use of smokeless tobacco,

11. family structure and perceived relationship with parents for the dependent variable use of smokeless tobacco, and

12. gender, family structure, and perceived relationship with parents for the dependent variable use of smokeless tobacco.

Review of Literature and Results of Present Study

Peer influence is one of the most frequently reported variables in substance use among youth and has been shown to be a common variable among young users. Pisano and Rooney (1988) reported that in their survey of fourth, fifth, and sixth graders, students showed a significant shift in attitude away from parents and towards peers between the fifth and sixth grades. Sarvela et al. (1986) found a high correlation between the frequency of peer use of marijuana and the frequency of personal use. Bonaguro et al. (1986) reported that smokeless tobacco use among males was highly associated with peer usage. The present study supported the importance of peer influence.

It showed that peer substance use was a significant main effect for all dependent variables. Ten out of 12 significant interactions involving peer substance use showed that subjects whose peers were users reported an equal or higher mean use of smokeless tobacco, amount of alcohol use, frequency of alcohol use, and number of cigarettes smoked than subjects in equivalent categories but whose peers were non-users. The 2 exceptions involved smokeless tobacco. Subjects whose peers were users, but who had a very positive self-concept reported no use even though family substance use was high (Figure 12). It is possible that smokeless tobacco was not the drug of choice by family, subject, or peers. The other exception was between peer substance use and subjects with very positive self-concept (Figure 10). Again smokeless tobacco may not have been the drug of choice. Peer influence remained strong in other situations where family use was high or where self-concept was concerned. For all levels of family use, subjects with peers who were non-users reported a less mean amount of alcohol use than those whose peers were users, regardless of self-concept. The same was true for number of cigarettes smoked. If peers were not users, subjects reported less number of cigarettes smoked even though family use was high. However, for those whose family substance use was low, only subjects with peer users and very positive self-concept reported using cigarettes. It is possible that their self-concept was very positive because they felt cigarette use caused better peer acceptance. For the dependent variable use of smokeless tobacco, those subjects with average to poor self-concept did as their peers. Those whose peers were users and who were from

families of high substance use reported the highest use. Those with low self-concepts with non-using peers reported no use of smokeless tobacco even when family substance use was high. Subjects from families of low substance use, however, reported no use of smokeless tobacco regardless of self-concept level or peer usage. This indicates family modeling of low substance use could be more influential than peer behavior.

Parent-child communications have also been shown to be an influencing factor in youthful drug use. Winfree's (1985) longitudinal study indicated that peer influence may increase as parent-child communications deteriorate. He found that parent-child conflict was the second best indicator of alcohol use. Selnow (1987), investigating intact and single-parent families, reported that children from single-parent homes had greater substance use, but that children who reported stronger relationships with parents had lower substance use. He suggested that a stronger parent-child relationship could have a greater influence on reducing drug use than family structure. Meaningful conclusions concerning family structure can not be accurately drawn from the present study because of the small number of subjects from non-intact families, even though it appeared in two significant interactions. However, results supported the importance of a good parent-child relationship. The present researcher investigated this relationship in two ways, by the subject's perceived relationship with parents and by the subject's attitude towards family. Perceived relationship with parents was a significant main effect for use of smokeless tobacco, and was a factor in three significant interactions

for use of smokeless tobacco. Subjects with good to very good perceived relationship with parents reported less mean use of smokeless tobacco than those with OK to poor perceived relationships. In fact, subjects who perceived an OK to poor relationship from intact families reported the most smokeless tobacco use.

The variable attitude towards family was found in eight significant interactions. The interaction of attitude towards family and peer substance use with family substance use for the dependent variable smokeless tobacco showed that subjects with peers who were non-users and who had a very positive attitude towards family reported no use unless their family's use was high. This could indicate the influence of family values concerning drugs. Subjects with average to poor attitude towards family tended to do as peers did. For families with high use, subjects whose peers were users and whose attitude towards family was average to poor reported the highest use of smokeless tobacco. But for subjects with peers who were non-users and attitude towards family was average to poor, no use was reported even though the family use was high, possibly a rejection of family values for peer values. Concerning frequency of alcohol use, subjects with very positive self-concept and very positive attitude towards family reported less frequent use than those of very positive self-concept but with average to poor attitude towards family. For those with very positive attitude, their frequency of alcohol use increased as the family substance use increased. Subjects with average to poor attitude and from families of low use reported more use than those with very positive attitudes. However, as family use increased, so did

subject use. This would indicate that parental modeling of drug use is influential regardless of their child's attitude towards their family. Finally, subjects from families with low substance use who had very positive self-concepts but average to poor attitude towards family showed the most frequent use, perhaps an indication of rebelling against parents. But those with very positive self-concept and very positive attitude towards family showed the highest frequency of use of those subjects from families of high use. The relationship between subject use and attitude towards family was apparent in several instances, but one must consider whether the family's modeling of substance use was not the more influential variable.

Recent studies indicated that parental modeling of substance use influenced the child's use. Studies involving elementary students by Young, Hall-Lundstrum, and Core (1987) and Young and Foulk (1985) showed that seeing alcohol and tobacco used at home increased the expected use of those products by the children. A statistically significant number of students in the 1987 study were currently using alcohol. In the present study, family substance use was a significant main effect for number of cigarettes smoked, frequency of cigarette use, use of smokeless tobacco, and frequency of alcohol use. Fifteen significant interactions involved family substance use. In 11 interactions higher family substance use resulted in higher mean use by subjects. Exceptions to this pattern occurred when interactions involved one or two of the following: attitude towards family, self-concept, and peer substance use. Peers seemed more influential when attitude towards family was average to poor. On the other hand,

subjects with very positive attitude towards family reported some use if family use was high, whether or not peers were users. Also, subjects from families with low substance use reported no use of smokeless tobacco. These results would tend to support the influence of family modeling.

The nature or strength of the relationship of self-concept to substance use has not been established. Mitic (1980) and Young et al. (1987) found a strong relationship between self-esteem and substance use, but report inconsistencies that would prevent self-esteem from being a predictor of drug use in young people. Ried et al. (1987) and Hays et al. (1984) suggested that self-esteem weakened when other variables were controlled and did not hold up as a significant predictor. In the present study self-concept was a significant main effect for number of cigarettes smoked and use of smokeless tobacco and was in 13 significant interactions. Self-concept appears to be influenced by family substance use and peer substance use. The data showed that in most instances, if peers were users subjects with average to low self-concept were also users. In addition, they reported a higher mean use than their counterparts with very positive self-concept. The tendency also existed that for those who were users, their mean amount of use increased as family use increased. For number of cigarettes smoked, if peers were users subjects with average to poor self-concept report a higher mean number smoked than subjects with very positive self-concept. For subjects from families of medium to high use and whose peers are users, those with average to poor self-concept report a higher mean number of

cigarettes smoked than those with very positive self-concept. For smokeless tobacco use, subjects with average to poor self-concept tended to do as peers do. If peers were non-users, subjects with average to poor self-concept reported no use, whereas if peers were users, subjects with average to poor self-concept report the highest use. For the dependent variable amount of alcohol use, if peers were non-users and family use was low or high, students with average to poor self-concept also reported no use. But for the same dependent variable when both levels of self-concept were users, those with average to poor self-concept from families of medium to high use reported a higher mean use than those with very positive self-concept. Although subjects with both very positive and average to poor self-concept reported use, those with poor self-concept who were users nearly always reported greater mean use. This would indicate that those subjects of lower self-concept would be more at risk for substance abuse.

Bonaguro et al. (1986) and Sarvela et al. (1986) reported that males were heavier users of marijuana and smokeless tobacco. Kandel (1980) maintained that male adolescents were more likely to use and abuse all categories of drugs than were females. This statement is supported by the results of the present study. For all dependent variables explored, males reported a higher mean use than females. However, gender was found to be statistically significant in only one instance, for smokeless tobacco. No females reported smokeless tobacco use.

Mauss, Hopkin. Weisheit, and Kearney (1988) suggested that pre-established factors may influence young persons feelings about drugs. These factors included societal norms as well as peer control and parental control. Young and Williamson (1983) and Mauss et al. (1988) point out the influence of the media on drug use and attitudes towards drugs. Although not intended as a variable in the present study, students were asked to indicate where they had heard most about drugs being fun. Fifty-four percent indicated their source was television or movies. Considering the amount of time children spend watching television, this factor is one that certainly must be confronted. When asked where they had heard the most about the dangers of drugs, 36% reported their family. This information strengthens the importance of the family's role in influencing children's attitudes and behaviors concerning drugs.

The results of the present study supported much of the research reviewed. Peer behavior is a strong factor when dealing with children in the upper elementary grades. Subjects of lower self-concept may also be at risk. However, parents who model low substance use and maintain a working, supportive relationship with their child, according to the results of this study, are likely to be successful in helping that child develop healthy attitudes and behaviors concerning substance use.

Generalizations

The results of the present study appeared to support the following generalizations:

1. subjects whose peers were users reported a higher frequency of cigarette use,

2. subjects whose family use was high reported a higher frequency of cigarette use,

3. subjects whose family use was high reported a greater number of cigarettes smoked,

4. male subjects reported greater use than female subjects for all dependent variables, but only significantly so for smokeless tobacco,

5. subjects who perceived an okay to very poor relationship with parents reported greater use of all dependent variables, but only significantly so for smokeless tobacco,

6. subjects from families with high substance use reported significantly more use for all dependent variables,

7. subjects with an average to poor attitude towards family reported greater use of smokeless tobacco,

8. subjects whose peers were users reported greater use of all dependent variables,

9. subjects with average to poor self-concept reported greater number of cigarettes smoked, and more smokeless tobacco use,

10. subjects whose peers were users, who had average to poor self-concept, and whose family substance use was high reported a greater number of cigarettes smoked,

11. subjects whose peers were non-users and whose family use was low reported no cigarettes smoked regardless of self-concept,

12. subjects with low family use reported no use of smokeless tobacco regardless of peer use or attitude towards family,

13. subjects whose peers were users, who had an average to poor attitude towards family, and whose family use was high reported the most use of smokeless tobacco,

14. subjects with average to poor self concepts whose family use was high and whose attitude towards family was average to poor reported the greatest use of smokeless tobacco,

15. for both levels of attitude towards family and both levels of self-concept, subjects whose family use was low reported no use of smokeless tobacco,

16. male subjects from intact families who perceived an okay to poor relationship with parents reported the greatest smokeless tobacco use,

17. for both levels of self-concept and for all levels of family use, subjects whose peers were users reported greater amount of alcohol use than subjects whose peers were non-users,

18. for both levels of self-concept, subjects whose peers were non-users and whose family use was high reported no use or less amount of alcohol used than subjects whose peers were non-users and whose family use was low or medium,

19. subjects whose peers were not users who had very positive attitude towards family reported less amount of alcohol use than those whose peers were not users who had an average to poor attitude towards family,

20. subjects whose peers were users and whose family use was high reported the greatest frequency of alcohol use,

21. for both levels of peer use, subjects whose family use was high reported greater frequency of alcohol use than subjects whose family use was low, and

22. subjects with very positive self-concept and average to poor attitude towards family whose family substance use was low reported greater frequency of alcohol use.

Implications

The results of this study have several implications for elementary counselors, administrators, and teachers, as well as for parents. Children near fifth- and sixth-grade age are greatly influenced by what their peers think and do. This does not mean, however, that they are not influenced by anyone else. Children this age still emulate those adults with whom they identify, whether it be family members, school personnel, or heroes in the media. These significant others must be aware of their potential to guide students by their behaviors, beliefs, and the communication of these to the child. The attitudes towards substance use that are acted out by community and family members provide a model for children to develop their own values and attitudes. In the rural communities surveyed, alcohol consumption is acceptable if not expected at many activities and celebrations. The fifth- and sixth-grade students surveyed appeared to be adopting similar expectations. Of the subjects reporting use, 100% reported use of alcohol, while only 15% and 11% reported using cigarettes and smokeless tobacco respectively.

For the schools the results of the study suggest the need for the implementation of drug information programs beginning before upper elementary age. Public awareness programs, such as SADD, may educate older students and adults about their behavioral influence on youngsters. In addition, county or community programs to strengthen parenting skills could help parents understand the importance of role modeling in affecting the development of their child's attitudes towards drugs, as well as how to maintain a healthy relationship with their children. This relationship along with appropriate substance use behaviors can be effective in reducing their child's use of drugs.

Recommendations

In order to survey enough students in rural Kansas to obtain minimum sample size, the researcher traveled to 5 different small towns. Although sample size was adequate, the low percentage of users in the sample made the mean use scores quite small. In addition, several students were not allowed by their parents to participate in the study. At one school a student was removed from the room and not allowed to complete the survey. On several surveys students did not answer all the questions, reducing the sample size even more. Although there was not a large number of any of these problems, together they reduced the already small sample by about 15%.

When surveying young people there is always the question of whether they understand the terms. Questions were raised by a few individual students concerning the pronunciation of "marijuana" and

the meaning of "smokeless tobacco". For others who may have had the same question but did not ask, responses may have been affected.

Results of the present study appeared to support the following recommendations:

1. the study should be replicated using a larger sample size,
2. the study should be replicated using only the results from students who are users,
3. the survey should be prefaced with a definition of terms which the researcher feels may be difficult to read or understand,
4. the study should be replicated in other rural areas of Kansas, and
5. the study should be replicated in communities comprised of a cultural background different from the German-Catholic influence of the communities represented by the present study.

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Appendix A

Elementary Student Survey

ELEMENTARY STUDENT SURVEY

Directions: Your answers to these questions will be strictly confidential. Do NOT put your name on this or any of the other sheets. There are NO right or wrong answers. You may choose NOT to do this survey.

Read each question carefully. Circle the answer that best describes you. Please answer every question.

Personal Information

1. What is your sex?
   A. Boy
   B. Girl

2. What grade are you now in?
   A. 5th
   B. 6th

3. Which of the following statements best describes you?
   A. Live with both parents
   B. Live mostly with one parent
   C. Live with someone other than parents

4. How is your relationship with your parent(s) or caregivers?
   A. Very poor
   B. Poor
   C. OK
   D. Good
   E. Very good

5. Where have you heard the most about drugs/alcohol being used for fun?
   A. Family
   B. School
   C. Magazines
   D. TV/Movies
   E. Other kids
   F. Nowhere

6. Where have you learned the most about the dangers of drugs and drinking?
   A. Family
   B. School
   C. Church
   D. TV/Movies
   E. Other kids
   F. Nowhere

Friends' Substance Use

1. How many of your friends sometimes use marijuana?
   A. None
   B. One
   C. Several
   D. Most
   E. All

2. How many of your friends sometimes use cigarettes?
   A. None
   B. One
   C. Several
   D. Most
   E. All

3. How many of your friends sometimes use smokeless tobacco?
   A. None
   B. One
   C. Several
   D. Most
   E. All

4. How many of your friends sometimes use alcohol (beer, wine, liquor)?
   A. None
   B. One
   C. Several
   E. Most
   F. All

Personal Substance Use

1. How many cigarettes have you smoked in the last month (30 days)?
   A. None
   B. One or part of one
   C. 2-4
   D. 5-20
   E. More than one pack

2. How many times have you used smokeless tobacco in the last month (30 days)?
   A. None
   B. Once
   C. 2-4 times
   D. 5-10 times
   E. More than 10 times

3. Not counting the use of wine in church, how often do you use alcohol (beer, wine, liquor)?
   A. Never
   B. At least once a day
   C. Once or more a week
   D. Once or more a month
   E. Once or more a year
   F. Only on holidays

4. How often do you smoke cigarettes?
   A. Never
   B. At least once a day
   C. Once or more a week
   D. Once or more a month
   E. Once or more a year

5. How many drinks of beer, wine, or liquor have you had in the last month (30 days)?
   A. None
   B. One or part of one
   C. 2-4
   D. 5-10
   E. More than 10

6. How often do you use marijuana?
   A. Never
   B. At least once a day
   C. Once or more a week
   D. Once or more a month
   E. Once or more a year

7. How often do you use smokeless tobacco?
   A. Never
   B. At least once a day
   C. Once or more a week
   D. Once or more a month
   E. Once or more a year

8. How many times have you used marijuana in the last month (30 days)?
   A. None
   B. Once
   C. 2-4 times
   D. 5-10 times
   E. More than 10 times

Substance Use at Home

1. How often is alcohol used in your home?
   A. Never
   B. Seldom (Only special occasions)
   C. Sometimes (Once or more a month)
   D. Frequently (Once or more a week)
   E. Often (Daily)

2. How often is marijuana used in your home?
   A. Never
   B. Seldom (Once or more a year)
   C. Sometimes (Once or more a month)
   D. Frequently (Once or more a week)
   E. Often (Daily)

3. How often is smokeless tobacco used in your home?
   A. Never
   B. Seldom (Once or more a year)
   C. Sometimes (Once or more a month)
   D. Frequently (Once or more a week)
   E. Often (Daily)

4. How often are cigarettes (or other smoking tobacco) used in your home?
   A. Never
   B. Seldom (Once or more a year)
   C. Sometimes (once or more a month)
   D. Frequently (Once or more a week)
   E. Often (Daily)

Appendix B

Personal Attribute Inventory for Children

Personal Attribute Inventory for Children

Read through this list of words. Then put an X in the box beside the 15 words which best describe _____.

[ ]	Afraid	[ ]	Happy
[ ]	Angry	[ ]	Healthy
[ ]	Awkward	[ ]	Helpful
[ ]	Bad	[ ]	Honest
[ ]	Beautiful	[ ]	Jolly
[ ]	Bitter	[ ]	Kind
[ ]	Brave	[ ]	Lazy
[ ]	Calm	[ ]	Lovely
[ ]	Careless	[ ]	Mean
[ ]	Cheerful	[ ]	Nagging
[ ]	Complaining	[ ]	Nice
[ ]	Cowardly	[ ]	Polite
[ ]	Cruel	[ ]	Pretty
[ ]	Dirty	[ ]	Rude
[ ]	Dumb	[ ]	Selfish
[ ]	Fairminded	[ ]	Show-off
[ ]	Foolish	[ ]	Strong
[ ]	Friendly	[ ]	Sweet
[ ]	Gentle	[ ]	Ugly
[ ]	Gloomy	[ ]	Unfriendly
[ ]	Good	[ ]	Weak
[ ]	Great	[ ]	Wise
[ ]	Greedy	[ ]	Wonderful
[ ]	Handsome	[ ]	Wrongful

Appendix C

Procedure for Administering the Instruments

Procedure for Administering the Surveys

My name is Hannah Barrett. I am a teacher and a student. Your cooperation in filling out three instruments will help me complete a project. Please answer all questions. Do NOT put your name on anything I give you. The information will remain completely confidential, or private. You may choose not to do these instruments.

*Please remove the (color) sheet(s) from your packet. Follow along as I read the directions at the top of the page.

(Read directions printed on instrument.)

After you are finished with this instrument, check to be sure you've answered all questions. Then return it to the packet and sit quietly until further instructions are given.*

(Repeat from * to * for each instrument.)

When all instruments were returned to the packet, the researcher collected the packets and thanked the students and the teacher for their time and cooperation.

Appendix D

Letter to Parents

November 12, 1990

Dear Parents or Guardians,

As a part of my Master's requirements, I am conducting research concerning the use of alcohol and other drugs among fifth and sixth graders in rural Kansas. With the permission of your superintendent and your child's teacher, I will survey the fifth and sixth graders in your school on November 15. All information received will be strictly confidential. No names will be marked on the instruments. There will be no other activities involved with this survey.

Please return the lower portion of this letter to your child's teacher by Wednesday, November 14, indicating whether or not you grant permission for your child to participate. For further questions concerning this project, please call me evenings at 857-3590, or contact your superintendent.

Thank you for your cooperation.

Sincerely,

Hannah J. Barrett

Yes, _____ may participate in the drug use survey.
(child's name)

I do not wish for _____ to participate in the drug use survey.
(child's name)

_____
Parent or Guardian Signature